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Rural Congestion Management System (CoMS)

2005 Report

Rail, Transit, and Planning Division
Data and Statistics Bureau
Planning Systems Section
November 2005

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2005 CoMS Report

CONTENTS

NO. 1 Report Overview / CoMS Information

NO. 2 Interstate System

NO. 3 Rural NI-NHS

NO. 4 Rural Primary System

NO. 5 Secondary System

NO. 6 State Highways

NO. 7 Corridors

NO. 8 Functional Class / Special Facilities / Miscellaneous

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Overview

The Congestion Management System (CoMS) underwent significant changes since the 2003 Report. The past year has been spent bringing CoMS into compliancy with the Transportation Information System (TIS). CoMS was previously base route driven while the TIS had integrated the Departmental route and Corridor naming conventions. This TIS compliancy conversion has enabled CoMS to perform analyses by departmental route and corridor rather than the previous base route naming convention. This program conversion was a large undertaking and involved a great deal of time and effort. For this reason time did not allow for an analysis using 2003 traffic data. For the purposes of this report, 2001 and 2002 will be used for comparison purposes. The following table provides a quick reference of the State's overall congestion indices by system. The table shows a comparison of the 2001, 2002 & 2004 CIs to the projected CIs in five-year increments. Due to staffing constraints traffic information is only available on five State Highways; therefore an individual analysis was run on each of these five routes but no statewide analysis was calculated.

Statewide Systems' Congestion Indices

System	2001[1] Existing[2]	2002 Existing	2004 Existing	2004 E+C[3]	2009 Existing	2009 E+C	2014 Existing	2014 E+C	2019 Existing	2019 E+C	2024 Existing	2024 E+C
Interstate	94	93	93		92		90		89		86	
NI-NHS	75	74	75	76	73	74	71	72	69	70	66	68
Primary	80	79	79	79	78	78	76	76	75	75	73	73
Secondary	92	91	91	91	91	91	90	90	89	89	89	89
All On-Systems[4]	85	-	84	85	84	85	83	84	82	83	80	82

[1] Traffic Year
[2] Existing Highway Network
[3] Existing plus Committed Highway Network
[4] Includes only on-system routes that are analyzed by CoMS.
Shaded cells indicate there are no capacity enhancing projects for this system.
- Due to the TIS compliancy conversion CoMS could not analyze at the statewide level using 2002 traffic data.

The following table illustrates the percent of miles, by system, in each of the level of service ranges. The percentages are a comparison of the current traffic year (2004) to the projected traffic year (2024). No committed or recommended improvements are included.

Percent of Miles by Level of Service

		System							
		Interstate		NI-NHS		Primary		Secondary	
		2004	2024	2004	2024	2004	2024	2004	2024
Level of Service	A	95.4	71.2	34.8	24.9	38.8	31.5	78.6	72.5
	B	4.5	23.0	33.6	28.1	38.3	34.0	17.4	19.3
	C	0.1	3.4	20.9	23.3	17.3	17.6	3.2	4.6
	D	0.0	2.5	7.8	11.2	3.3	9.7	0.6	2.8
	E	0.0	0.0	2.9	9.9	2.2	6.5	0.1	0.7
	F	0.0	0.0	0.0	2.7	0.0	0.7	0.0	0.1

CoMS Information

CoMS Definition

The Congestion Management System, or **CoMS** as it is commonly called, is a database that utilizes several techniques (both automated and manual) to produce congestion indices **(CIs)** for the majority of Montana's "on-system" roads. The CoMS measures the current and, in the case of the rural corridors, the future (predicted) "operational health" of the highway systems.

On the rural highway corridors, CIs consist of point values ranging from 0 – 100 and are a numerical representation of the levels of service (LOS). Numerical ranges were developed 1) to accommodate the input for CoMS equations and 2) to identify any analysis segment/corridor's relative position within a LOS range.

The following table represents the CI range for each LOS.

LOS	CI RANGE
A	85 – 100
B	70 – 84
C	55 – 69
D	40 – 54
E	25 – 39
F	0 – 24

There are six levels of service defined for each type of facility (i.e. two-lane, multi-lane, and freeway). These LOSs are given letter designations, from A to F, with LOS A representing the best operating conditions and LOS F the worst. Each level of service represents a range of operating conditions. The definitions for these ranges vary based on the type of facility being analyzed, but following are *general* definitions of the operating conditions that exist at each level.

LOS A – Vehicles are completely unimpeded in their ability to maneuver within the traffic stream. Almost no platoons are observed.

LOS B – The ability to maneuver within the traffic stream is only slightly restricted, and the general level of physical and psychological comfort provided to drivers is still high. Minor disruptions are still easily absorbed at this level.

LOS C – Freedom to maneuver within the traffic stream is noticeably restricted. There are noticeable increases in platoon formation, platoon size, and frequency of passing impediments. Minor disruptions may be expected to cause serious local deterioration in service, and queues may form behind any significant traffic disruption.

LOS D – Freedom to maneuver is more noticeably limited and the driver experiences reduced physical and psychological comfort levels. Even minor incidents can be expected to create queuing because the traffic stream has little space to absorb disruptions.

LOS E – Roadway is operating at capacity. Operations at this level are volatile there being virtually no usable gaps in the traffic stream.

LOS F – Describes breakdowns in vehicular flow.

Congestion Definition

The Department, as part of the Performance Programming Process (P^3), has adopted congestion based performance objectives for each of Montana's highway systems, excluding local roads. A level of service deemed 'acceptable' was set for each system. For the Interstate System, the level is a LOS greater than C and for the remaining systems, NI-NHS, Primary, Secondary and State Highways, the acceptable LOS threshold has been set at greater than D. The "hot spot" maps in each system section show the sections of roads that do not meet these acceptable thresholds.

Highway Systems Addressed in the CoMS

In the 2005 CoMS report analyses are done on the Interstate, Non-Interstate National Highway System (NI-NHS), Primary, Secondary, and State Highway systems. Due to staffing constraints in the Traffic Section that prohibit data collection on most of the State Highway routes, the congestion analyses in this report is limited to the five routes that have traffic data available. The roads analyzed in this report comprise approximately 11,264 miles of Montana's 69,347-mile public road system. While these roadways make up only 16% of total public road miles, they carry more than 75% of the statewide total vehicle miles of travel. It can safely be assumed the vast majority of the congestion that does occur, occurs somewhere on these systems.

For each of these systems, excluding the Interstate, analyses are done only on the rural portions of the routes. Each analysis is conducted by route segment and is reported by system, by route and by corridor. Additionally, CoMS analyses are conducted by functional class groups, **but only on the highway systems described above**. The functional class groups consist of principal and minor arterials, major and minor collectors, urban collectors and local roads.

Also, as part of the TIS Route Naming compliancy protocol, CoMS analyzes corridors. An LOS for each individual Corridor can be found in the Corridor section, as well as district and statewide LOS's.

CoMS Uses

MDT's CoMS is the first step in the management of congestion in that it provides the information necessary for reactive congestion mitigation actions as well as enabling MDT to be pro-active in preventing future congestion.

While CoMS reflects a significant step forward in measuring the "operational health" of Montana's highway infrastructure, MDT and local governments have not dismissed congestion issues in the past. There are nine urban area comprehensive transportation plans which, in part, analyze roadway and intersection capacity issues in each respective area.

Forecasting Abilities

In addition to measuring current year congestion indices, the CoMS can predict or forecast future CIs on the 11,000+ miles of rural highways included as part of the analysis. Forecasting is accomplished in five year increments for twenty years, beginning five years from the traffic data 'base year' being used for the existing analyses. For the purpose of this 2005 CoMS summary report, the traffic data base year utilized is 2004; therefore, the forecasted years are 2009, 2014, 2019 and 2024.

Highway Network Analyses

The CoMS analyzes two types of highway networks for the rural corridor portions of the highway systems. The "**Existing**" highway network reflects the highway attributes and geometrics as they currently exist. Current and forecasted traffic volumes are assigned to the "**Existing**" system to determine the current CI as well as the effect of anticipated traffic growth on the highway systems if no improvements were made. The "**Existing plus Committed**" **(E+C)** network includes the existing highway attributes and geometrics plus those from any projects in the Tentative Construction Plan (TCP) that would affect the capacity of a highway. The TCP projects are the "committed" portion of the E+C analyses. By analyzing the E+C networks, the effect of planned projects on congestion can be determined before they are constructed.

CoMS Performance and Reporting Timeframes

The CoMS analyses are updated annually after the previous year's traffic data has been processed and is available for use. A CoMS report will be printed on a biennial basis. As the latest TIS digital roadway images become available, the on-system routes will be re-inventoried and the CoMS database updated.

For comparison purposes, two previous years' CIs are tracked in each CoMS report.

Analysis Techniques

The CoMS utilizes the capacity analysis techniques in the third edition of the ***TRB Highway Capacity Manual*** (HCM).

Data Sources

Information used in the CoMS is gathered from the TIS Roadlog, TIS Traffic file, MDT TIS digital image viewer and field inventories.

Data Items

Data items used in the CoMS include lane widths, shoulder widths, no passing zones, terrain types, surface types (paved vs. unpaved), traffic volumes by vehicle type, median types, lateral clearances, number of lanes and directional distribution of vehicles. To accommodate other non-CoMS needs within MDT, access points and rumble strip location data was also collected on a one-time basis only. While we do not collect access points as part of our regular inventory, we have continued to update the rumble strip data as necessary.

Miscellaneous CoMS Capabilities

This summary report contains general information about the "operational health" of the highway systems. However, the CoMS is capable of generating information not related to congestion indices themselves. For example, the CoMS can be queried to identify roads that have specified shoulder widths, those that have travel lanes of specified widths, terrain types, etc. The query type possibilities are limited only by the data types contained in the system.

CoMS Limitations

Inherent in the design of the CoMS are analysis capabilities at the route segment level. On the rural systems alone there are in excess of 23,200 analysis segments. With information this detailed there is an occasional tendency toward assuming it is of project design level quality. However, the CoMS was designed as a systems-level planning tool and should not be considered for use at the project design level.

CoMS History

Congestion Management Systems, by whatever name given them, are not new to the world of transportation. They have been in service in different forms in some of the more populous areas for many years. Many of these systems' geneses may have resulted out of necessity, being reactive rather than proactive in nature. The Intermodal Surface Transportation Efficiency Act of 1991 (ISTEA) required each state to develop six management systems, one of which was a CoMS. On July 20, 1995, FHWA issued a memorandum that included preliminary indications that the requirement for the management systems may be reduced or eliminated. In response to staff concerns the MDT Director's office issued an August 30, 1995 memorandum stating support for the continued development/enhancement of all six systems, regardless of whether or not the requirements would be reduced or eliminated. (The federal requirement for the systems was officially dropped on November 28, 1995).

The CoMS is only the first step in congestion management. It provides the information necessary to assess the current and future operational health of Montana's highway system. Armed with this information, MDT planners, engineers, program developers and the public can determine the best course of congestion mitigation/prevention actions on our highways.

CoMS Development Status
(as of October 2005)

As of this 2005 report, CoMS is TIS compliant and is no longer encumbered by complications resulting from the system not utilizing the same route naming conventions as the TIS.

The 2005 CoMS report includes results on all available rural corridors on the Interstate, NI-NHS, Primary, Secondary and State Highway systems.

The CoMS has the ability to analyze the MDT established Corridors on a district wide and statewide level as well as on an individual basis. As such, a Corridors section is included in the report for users who prefer to look at results in that format.

Further details are included in each specific section of this report.

Interstate System

General Information

Because of the high-level controlled access design features of the Interstate System, the entire system was analyzed using only the rural freeway capacity analysis techniques. It was not considered necessary to utilize any other techniques where the Interstate System passes through urban areas.

Individual Interstate Routes

Figure I-2 illustrates the Existing network CIs by individual routes.

Figure I-2

Route No.	2001[1] Existing[2]	2002 Existing	2004 Existing	2004 E+C[3]	2009 Existing	2009 E+C	2014 Existing	2014 E+C	2019 Existing	2019 E+C	2024 Existing	2024 E+C
I-15	96	96	96		95		94		93		92	
I-90	91	90	90		88		86		83		79	
I-94	96	96	95		95		94		94		93	
I-115	96	96	97		97		96		96		95	
I-315	61	59	63		57		51		46		40	

Those CI's in red reflect congestion indices of LOS C or lower (CI <70)

Note: All Interstate routes are considered as 100% rural.

[1] Traffic year

[2] Existing Highway Network

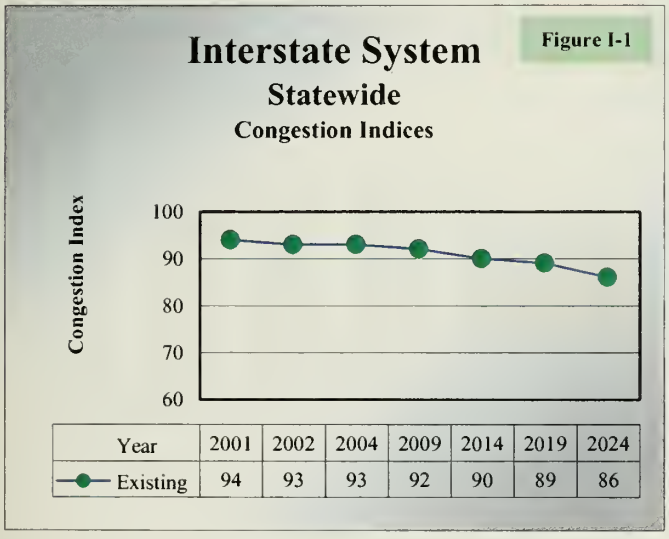
[3] Existing plus Committed Highway Network

☐ No capacity enhancing projects planned for these routes

Existing Network

As illustrated in **Figure I-1**, the statewide existing network CI is currently 93 (LOS A) and will not fall below a CI of 86 (LOS A) within the next 20 years.

Figure I-1



E+C Network

The E+C Network consists of the existing highway infrastructure plus any capacity enhancing projects in the most current TCP. In the case of the Interstate System, there are no capacity enhancing projects planned. Therefore E+C Network CIs were not calculated for the Interstate System.

District Comparisons

Figure I-3 (see page 2) compares the total Interstate mileage in each of the Financial Districts.

Figures I-4 through **I-8** (see page 2) compare the overall Interstate system CIs in each of the Financial Districts.

Figures I-9 through **I-11** (see pages 3-5) are maps which illustrate CIs on the existing highway network for the entire Interstate system for the years 2004 through 2024 in ten-year increments.

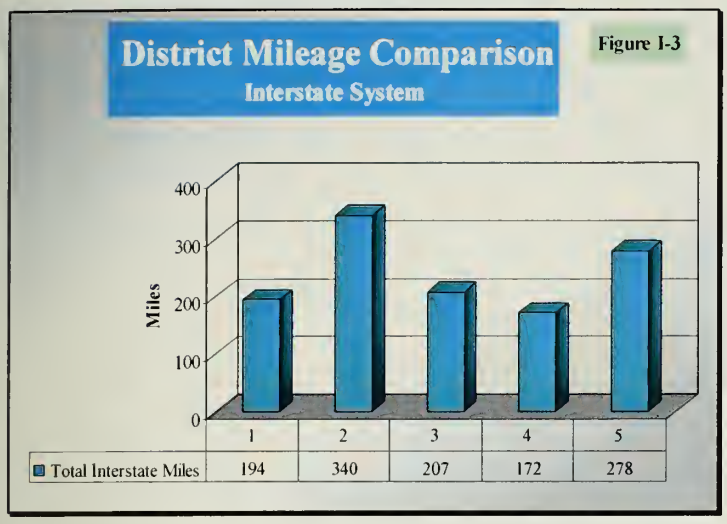
Hot Spots

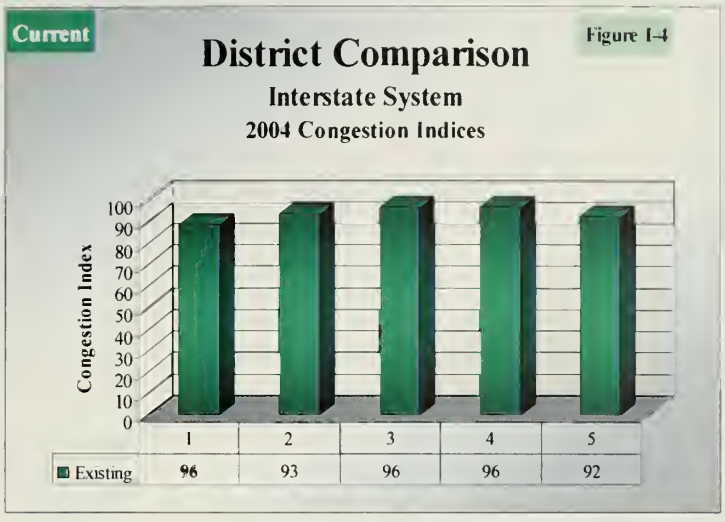
In the 1997 CoMS report, any segment with a LOS less than C was identified as a hotspot. With the implementation of the Performance Programming Process (P^3), the Department has adopted an 'acceptable level-of-service' for each of the systems. The Department's acceptable standard for the Interstate System is a CI ≥ 70 (LOS B and above).

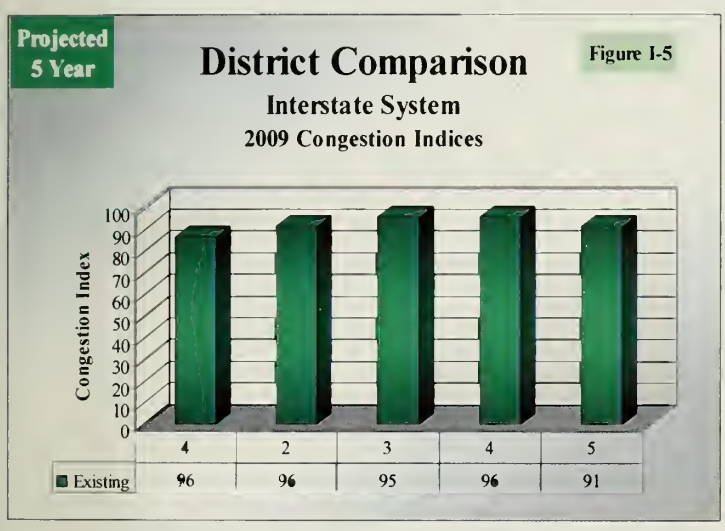
Figures I-12 and **I-13** (see page 6) have been developed to better illustrate segments of the Interstate that currently have, or are projected to have, service levels of less than B (LOS < 70).

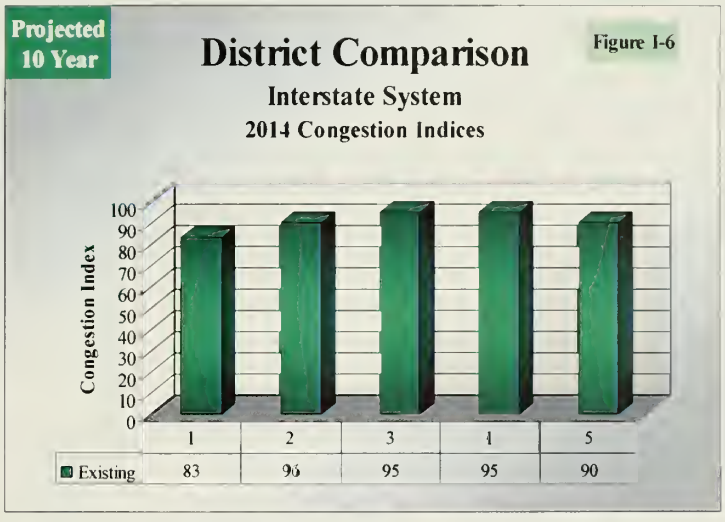
Figures I-14 and **I-15** (see page 7) compare the total number of miles of Interstate in each Financial District against the numbers of miles of Interstate operating at or below a CI of 70 (less than LOS B).

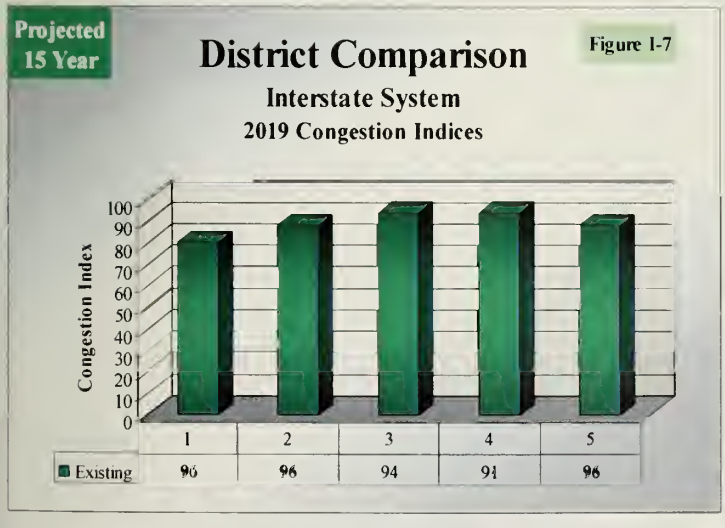
Interstate


District Mileage Comparison
Interstate System
Figure I-3
Miles
400
300
200
100
0
1
2
3
4
5
Total Interstate Miles
194
340
207
172
278


Current
District Comparison
Interstate System
2004 Congestion Indices
Figure I-4
Congestion Index
100
90
80
70
60
50
40
30
20
10
0
1
2
3
4
5
Existing
96
93
96
96
92


Projected
5 Year
District Comparison
Interstate System
2009 Congestion Indices
Figure I-5
Congestion Index
100
90
80
70
60
50
40
30
20
10
0
4
2
3
4
5
Existing
96
96
95
96
91


Projected
10 Year
District Comparison
Interstate System
2014 Congestion Indices
Figure I-6
Congestion Index
100
90
80
70
60
50
40
30
20
10
0
1
2
3
1
5
Existing
83
96
95
95
90


Projected
15 Year
District Comparison
Interstate System
2019 Congestion Indices
Figure I-7
Congestion Index
100
90
80
70
60
50
40
30
20
10
0
1
2
3
4
5
Existing
96
96
94
91
96

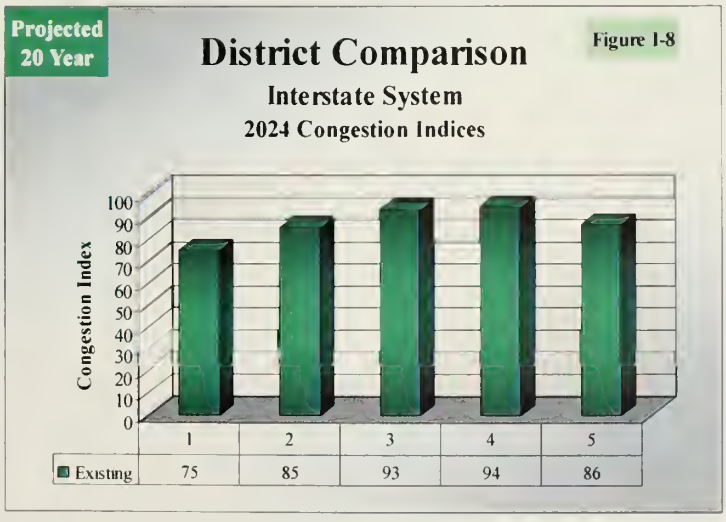
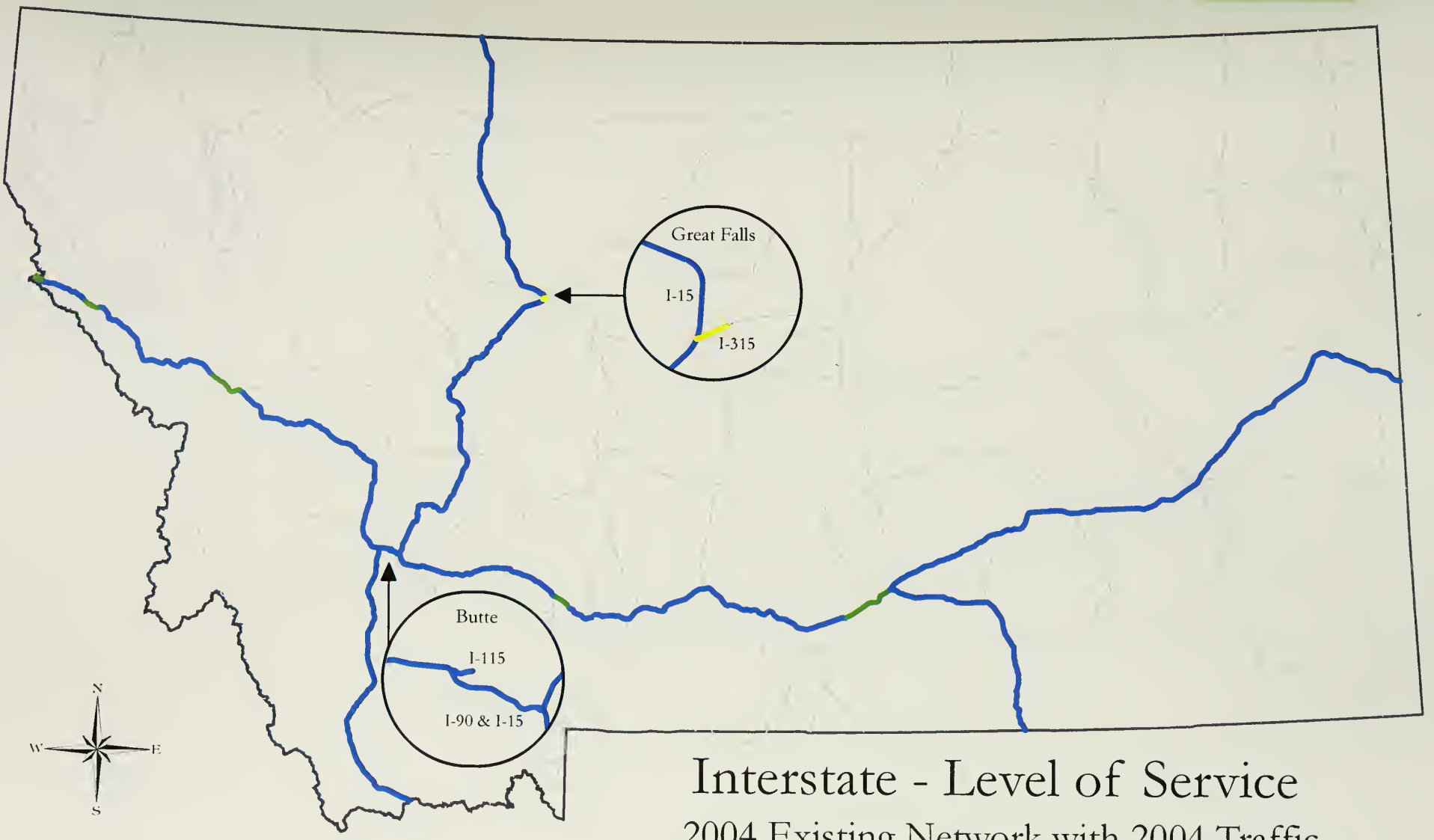

Projected
20 Year
District Comparison
Interstate System
2024 Congestion Indices
Figure I-8
Congestion Index
100
90
80
70
60
50
40
30
20
10
0
1
2
3
4
5
Existing
75
85
93
94
86

Figure I-9



Interstate - Level of Service

2004 Existing Network with 2004 Traffic

- Level of Service A
- Level of Service B
- Level of Service C
- Level of Service D
- Level of Service E
- Level of Service F
- NI-NHS & Primary

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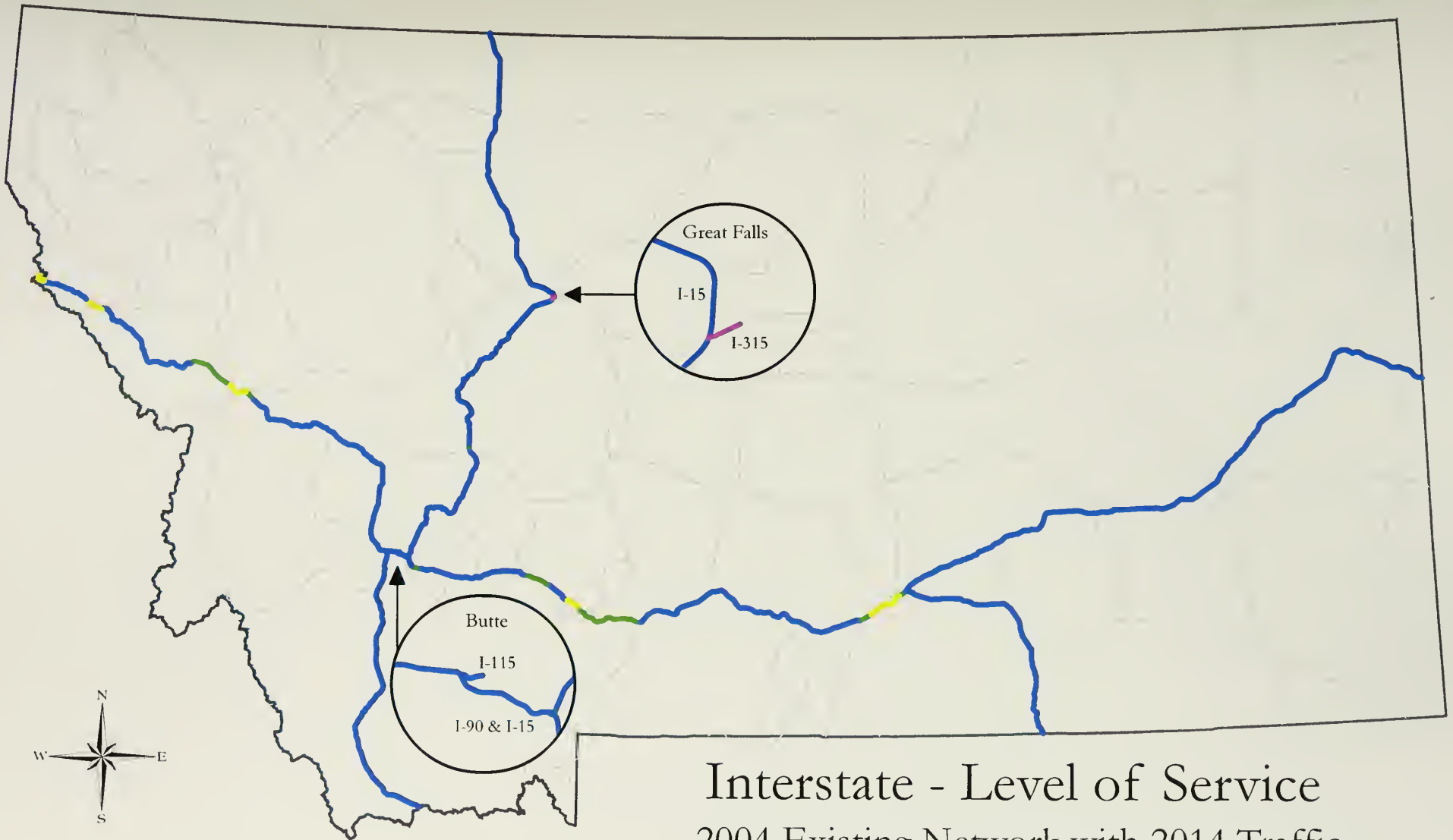
Figure I-10



Interstate - Level of Service

2004 Existing Network with 2014 Traffic

- Level of Service A
- Level of Service B
- Level of Service C
- Level of Service D
- Level of Service E
- Level of Service F
- NI-NHS & Primary

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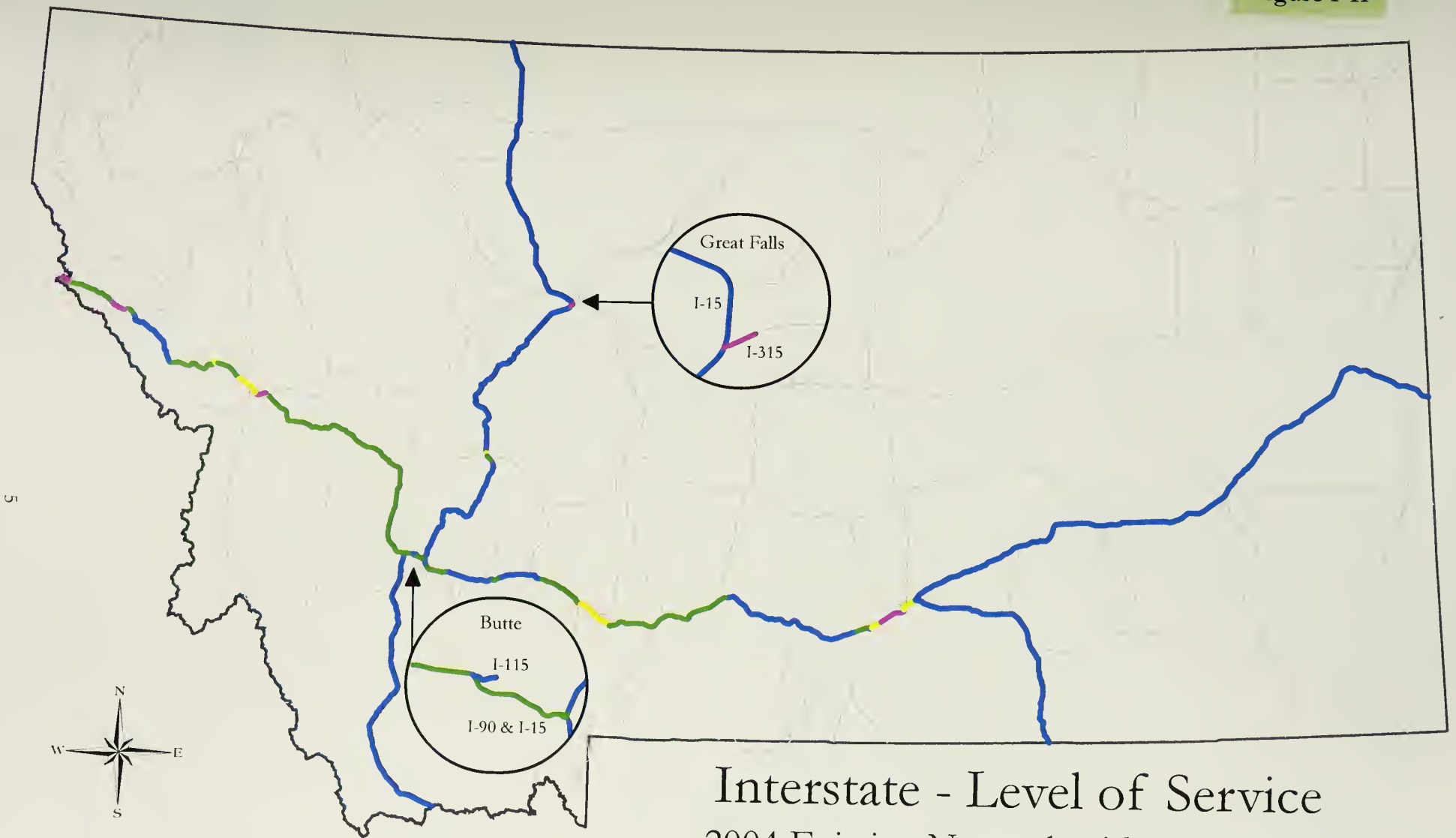
Figure I-11



Interstate - Level of Service

2004 Existing Network with 2024 Traffic

- Level of Service A
- Level of Service B
- Level of Service C
- Level of Service D
- Level of Service E
- Level of Service F
- NI-NHS & Primary

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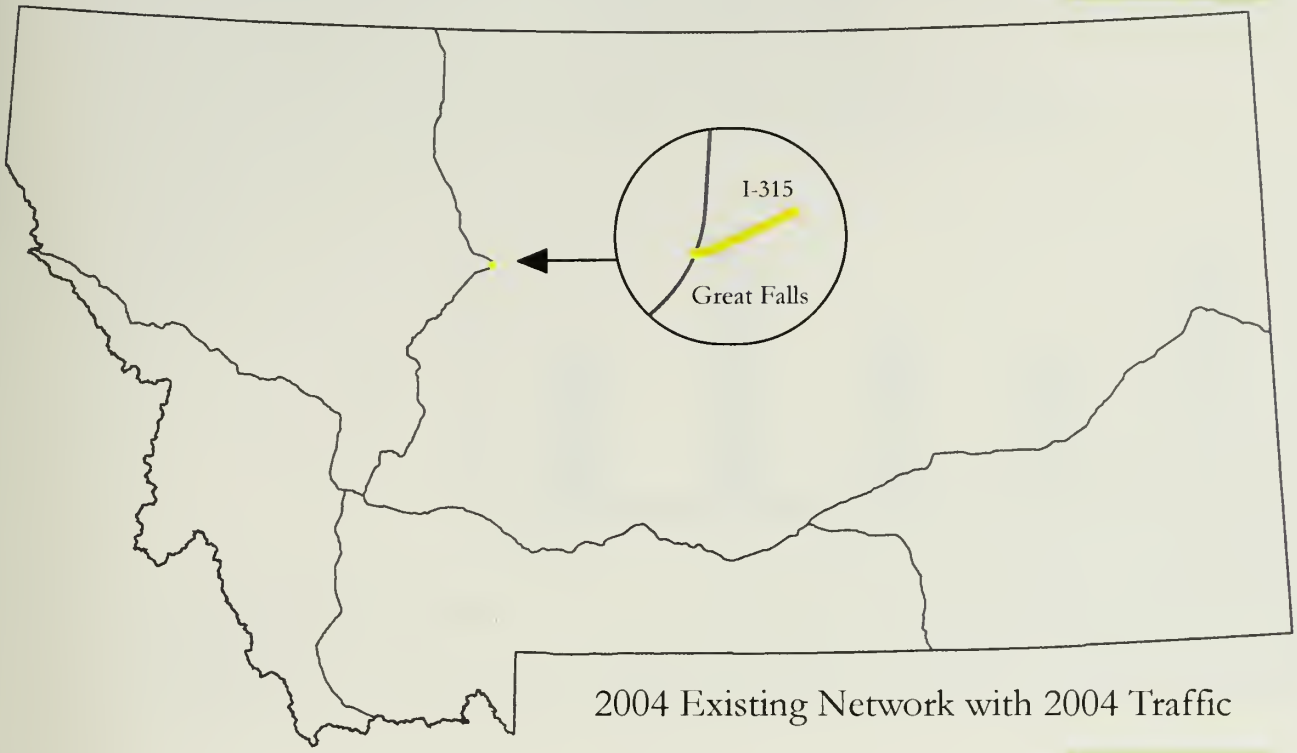
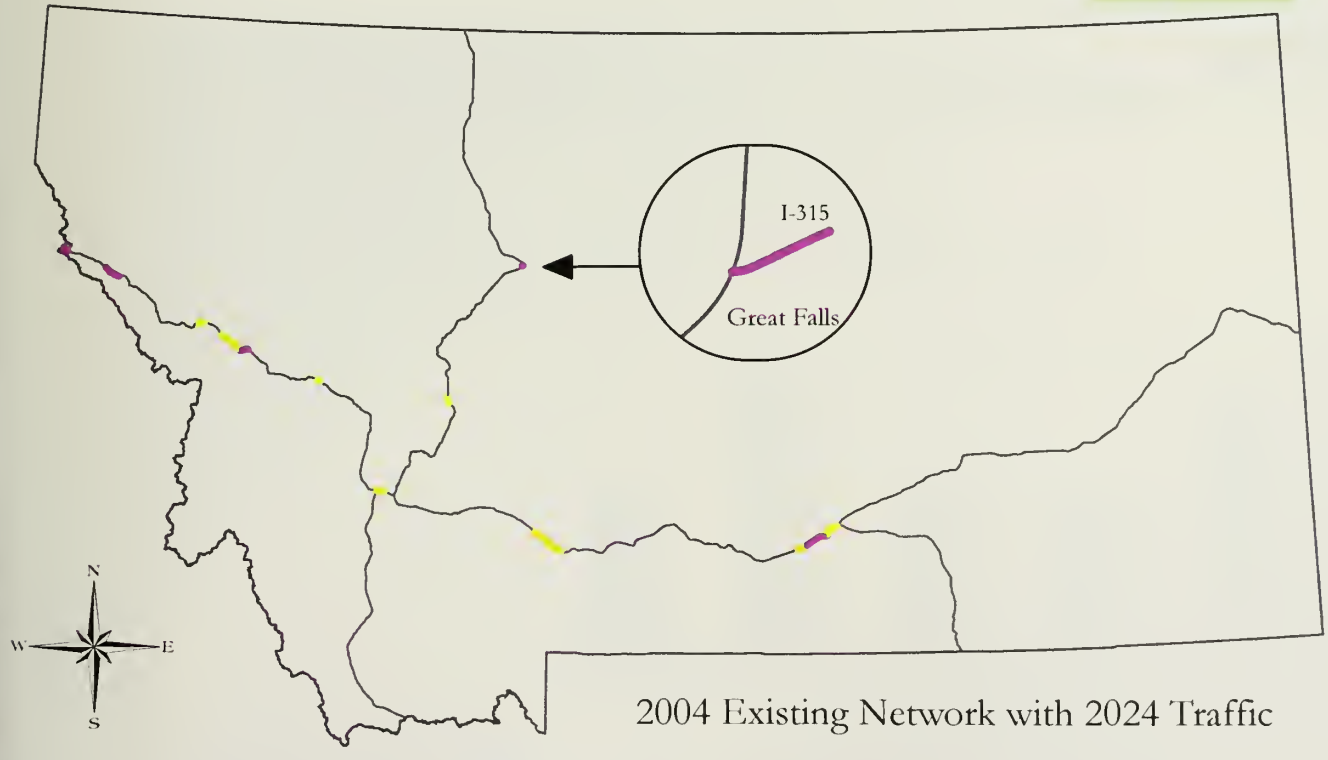
Interstate
Level of Service "Hot Spots"
(Congestion Index < 70 - LOS C or Lower)

Figure I-12



2004 Existing Network with 2004 Traffic

Figure I-13



2004 Existing Network with 2024 Traffic

Level of Service A
Level of Service B
Level of Service C
Level of Service D
Level of Service E
Level of Service F
Interstate

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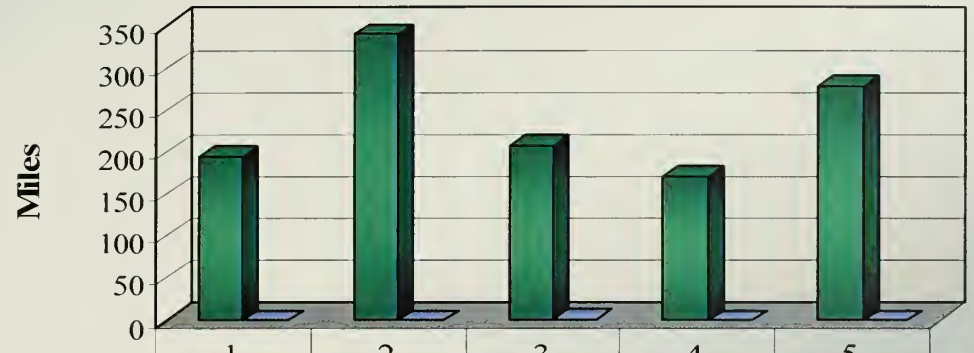
Figure I-14

2004 District Comparison "Hotspots"

Interstate System

Congestion Index < 70 (LOS of C or lower)



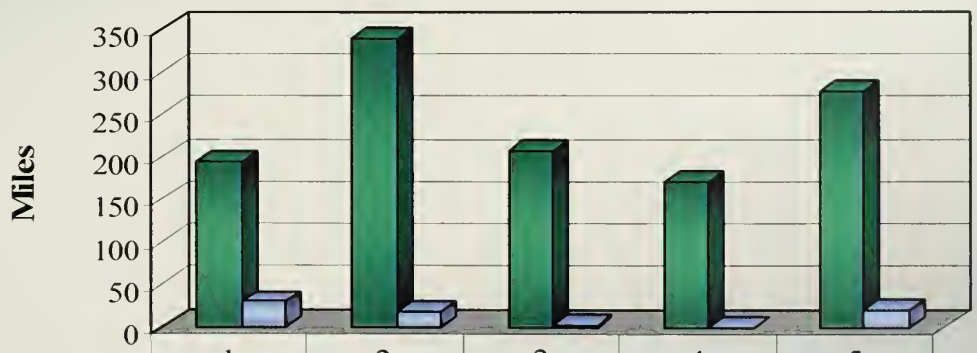
	1	2	3	4	5
Total Interstate Miles	194	340	207	172	278
Miles of CI < 70	0	0	1	0	0

Figure I-15

2024 District Comparison "Hotspots"

Interstate System

Congestion Index < 70 (LOS of C or lower)



	1	2	3	4	5
Total Interstate Miles	194	340	207	172	278
Miles of CI < 70	29	18	2	0	21

Rural Non-Interstate National Highway System

General Information

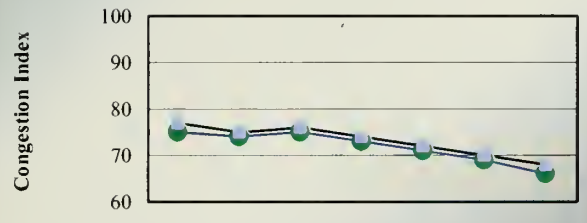
The following analysis reflects only the rural portions of the NI-NHS.

Existing Network

As illustrated in **Figure NHS-1**, the statewide existing network CI is currently 75 (LOS B) and will not fall below a CI of 66 (LOS C) within the next 20 years. Although the overall CI has varied slightly each year since 1996, the overall LOS has remained constant at a LOS of B throughout.

Figure NHS-1

Statewide
Non-Interstate NHS
Congestion Indices



Year	2001	2002	2004	2009	2014	2019	2024
Existing	75	74	75	73	71	69	66
E + C	77	75	76	74	72	70	68

E+C Network

The E+C Network consists of the existing highway infrastructure plus any capacity enhancing projects in the most current TCP. This list includes ***only*** projects with potential capacity enhancing features. The projects that have been let but have not yet been re-inventoried, due to lack of current TIS digital images, are highlighted in yellow:

	Project Name	Route	Uniform Project Number	Length (mi.)
1.	Meriwether-East	N-1	594	13.07
2.	Swamp Creek -East	N-1	1027	12.2
3.	Cut Bank-West	N-1	1310	8.01
4.	US 2-Saco	N-1	1515	0.84
5.	Dodson-East	N-1	1516	4.46
6.	East Glacier-West	N-1	1814	4.66
7.	Nashua-E & W	N-1	2144	10.2
8.	Bainville-E & W	N-1	2145	9.68
9.	Oswego-E & W	N-1	2147	8.06
10.	Havre-East	N-1	4049	10.2
11.	Brockton-East	N-1	4058	13.49
12.	Big Muddy Creek-East	N-1	4334	4.87
13.	Bridger-South	N-4	3179	13.08
14.	Ashley Creek-Kalispell	N-5	1012	2.49
15.	2.49 mi. N of Stillwater River-North	N-5	1061	3.5
16.	Stillwater River-North	N-5	1061	1.3
17.	Evaro-McClure Rd	N-5	1744	6.4
18.	McClure Rd-N of Arlee Couplet	N-5	1744	5.74
19.	Medicine Tree-Vic Red Horn Rd	N-5	1744	5.4
20.	Minesinger Trail - Mt 35	N-5	1744	2.6
21.	N of Arlee-Vic White Coyote Rd	N-5	1744	1.5
22.	South of Ravalli - Medicine Tree	N-5	1744	4.69
23.	Spring Creek Rd-Minesinger Trail	N-5	1744	7.3
24.	Vic White Coyote Rd-S Ravalli	N-5	1744	6.67
25.	Hamilton-N of Woodside	N-7	2015	4.69
26.	N of Woodside-Victor	N-7	2015	6.91
27.	Victor-N of Stevensville WYE	N-7	2016	7.69
28.	N of Stevensville WYE-Florence	N-7	2016	5.99
29.	Townsend - South	N-8	1420	8.2
30.	US 287 Pass Lane-S of Toston	N-8	3377	3.05
31.	US 287 Pass Lane-N of Three Forks	N-8	3377	3.23
32.	1.24 mi. S of Winston-South	N-8	4305	11.26
33.	Turn Bay-West T.F. Intch	N-8	4435	1.9
34.	Shawmut-West	N-14	4075	8.4
35.	18.64 mi NE of Glendive-NE	N-20	4053	10.3
36.	Volborg-N & S	N-23	1514	14.7
37.	Broadus-East	N-23	1517	15.41
38.	Coalwood-North	N-23	1824	8.3
39.	Epsie-E & W	N-37	2149	11
40.	Epsie-East	N-37	4056	7.69
41.	Busby – E & W	N-37	4844	8.25
42.	Yellowstone Park-Big Sky	N-50	4800	13.9
43.	2001-Grayling Cr-N of US 20	N-50	5026	1
44.	Main St.-Lavina	N-53	3924	0.33
45.	Jordan-East	N-57	2025	8
46.	Lewistown-West	N-57	4066	9
47.	Hobson-East	N-57	4368	12.26
48.	4.35 mi E. of Windham-East	N-57	4845	10.5
49.	Belt N & S	N-60	4043	10.2
50.	Sioux Pass-South	N-62	1041	5.75
51.	NW of Sidney-North	N-62	1041	9.76
52.	6.8 mi N of Harlowton - N	N-63	4072	7.69
53.	Judith Gap-N & S	N-63	4073	5.01
54.	Four Corners-North	N-85	4306	6.09

Individual NI-NHS Routes

Figure NHS-2 (see page 10) illustrates the Existing and E+C Network CIs by individual route.

District Comparisons

Figure NHS-3 (see page 11) compares the total NI-NHS mileage in each of the Financial Districts.

Figures NHS-4 through **NHS-8** (see page 11) compare the overall NI-NHS CIs in each of the Financial Districts.

Figures NHS-9 through **NHS-11** (see pages 12-14) are maps which illustrate CIs on the existing highway network for the entire NI-NHS system for the years 2004 through 2024, in ten-year increments.

Hot Spots

Figures NHS-12 and **NHS-13** (see page 15) have been developed to better illustrate segments of the Non-Interstate NHS that currently have, or are projected to have, service levels less than C. Only the 2004 and 2024 maps for the Existing Highway network are shown in this report. Interim year maps for the Existing and E+C networks are available upon request from the Data and Statistics Bureau.

Figures NHS-14 and **NHS-15** (see page 16) compare the total number of miles of NI-NHS in each District against the number of miles of NI-NHS operating below a CI of 55 (less than LOS C).

Rural Non-Interstate National Highway System

November 2005

Individual Routes

Congestion Indices

Figure NHS-2

Route Name	2001[1] Existing[2]	2002 Existing	2004 Existing	2004 E+C[3]	2009 Existing	2009 E+C	2014 Existing	2014 E+C	2019 Existing	2019 E+C	2024 Existing	2024 E+C
N-1	78	78	77	77	75	76	73	74	71	72	69	70
N-3	81	82	83		93		92		92		91	
N-4	77	76	74	71	72	72	70	71	65	69	66	67
N-5	85	54	58	65	52	69	84	56	84	52	37	47
N-7	63	62	70	65	65	82	65	65	62	65	59	76
N-8	81	81	65	73	65	73	62	69	58	65	55	60
N-10	63	81	82		65		80		70		78	
N-11	76	76	70		74		74		65		64	
N-12	44	44	36		84		35		30		27	
N-14	82	81	78	69	76	77	74	75	74	72	68	69
N-16	81	81	65		65		65		54		52	
N-20	76	76	70	78	76	77	75	75	74	75	72	73
N-22	85	76	84		80		83		82		82	
N-23	85	85	84	82	81	82	65	65	79	65	79	80
N-24	81	67	65		65		62		58		57	
N-34			65		65		65		83		80	
N-37	76	77	76	77	74	75	73	71	72	73	70	71
N-38	40	81	36		32		28		7		0	
N-50	52	50	47	65	84	84	35	35	84	84	26	26
N-53	76	76	65	65	82	82	65	65	78	78	75	75
N-57	84	83	79	65	79	65	78	73	78	73	76	76
N-60	61	61	84	64	58	82	65	69	53	56	51	54
N-61	84	84	65		83		92		65		79	
N-62	86	85	65	78	65	85	84	85	83	65	83	84
N-63	76	76	74	71	72	73	70	71	68	69	66	67
N-85	57	47	46	49	40	43	35	37	31	32	18	26
N-88	78	77	75		75		74		73		72	
N-92												
N-93	55	52	56		54		51		49		47	
N-99	96	96	96		96		96		96		95	
N-101												
N-102												
N-103												
N-104												
N-105												

CI's in red reflect congestion indices of LOS D or lower (CI <55)

Routes in blue represent those routes of which portions are on both the NI-NHS and the Primary system Only the CIs for the NI-NHS segments are reflected in this table

[1]Traffic Year

[2]Existing Highway Network

[3]Existing plus Committed Highway Network

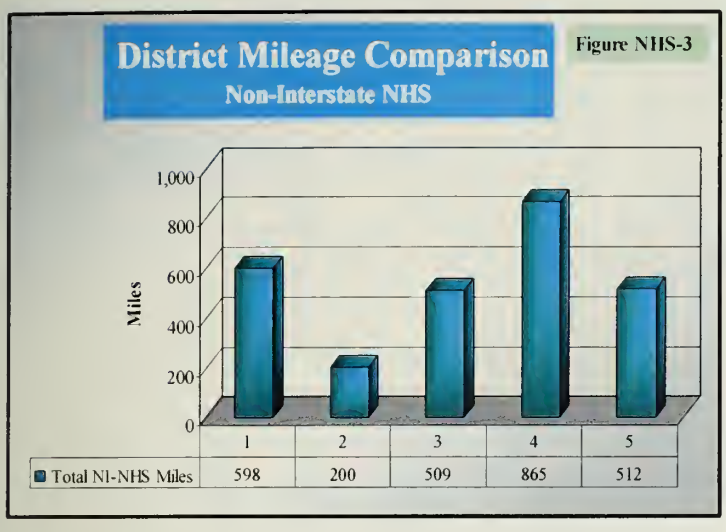
No capacity enhancing projects planned for this route.

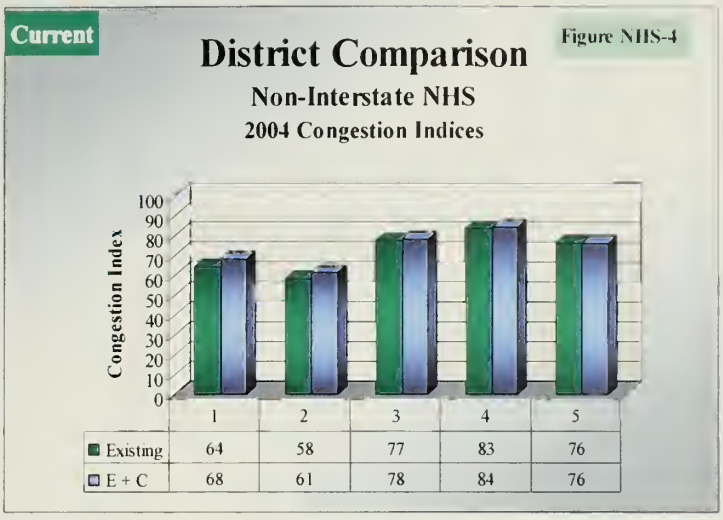
NI-NHS routes located in urban areas only; no CI's were computed

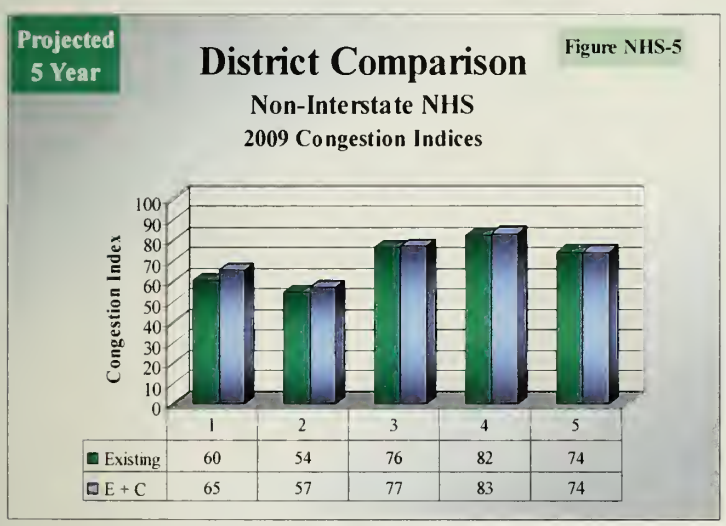
Projects on route have been let. Route will continue to show as having a committed project until the route has been re-inventoried.

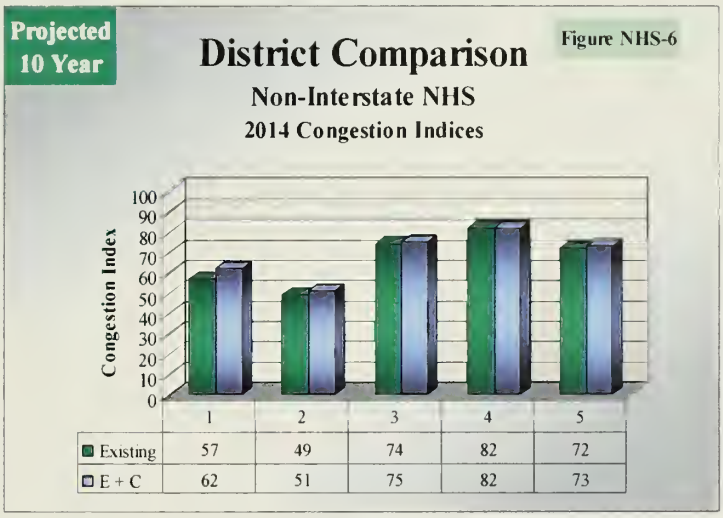
Route has been realigned **or** assigned a new route number not compatable with CoMS Unable to compute a CI.

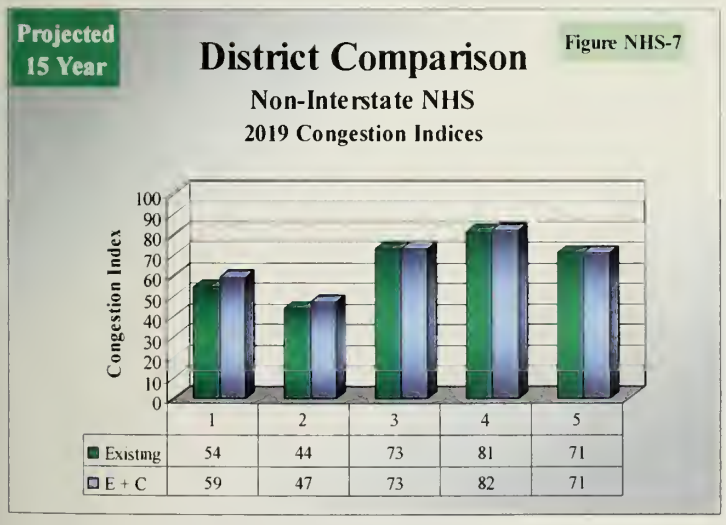
Rural Non-Interstate NHS




Current
District Comparison
Non-Interstate NHS
2004 Congestion Indices
Figure NHS-4
Congestion Index
100 90 80 70 60 50 40 30 20 10 0
1 2 3 4 5
Existing 64 58 77 83 76
E + C 68 61 78 84 76


Projected 5 Year
District Comparison
Non-Interstate NHS
2009 Congestion Indices
Figure NHS-5
Congestion Index
100 90 80 70 60 50 40 30 20 10 0
1 2 3 4 5
Existing 60 54 76 82 74
E + C 65 57 77 83 74


Projected 10 Year
District Comparison
Non-Interstate NHS
2014 Congestion Indices
Figure NHS-6
Congestion Index
100 90 80 70 60 50 40 30 20 10 0
1 2 3 4 5
Existing 57 49 74 82 72
E + C 62 51 75 82 73


Projected 15 Year
District Comparison
Non-Interstate NHS
2019 Congestion Indices
Figure NHS-7
Congestion Index
100 90 80 70 60 50 40 30 20 10 0
1 2 3 4 5
Existing 54 44 73 81 71
E + C 59 47 73 82 71

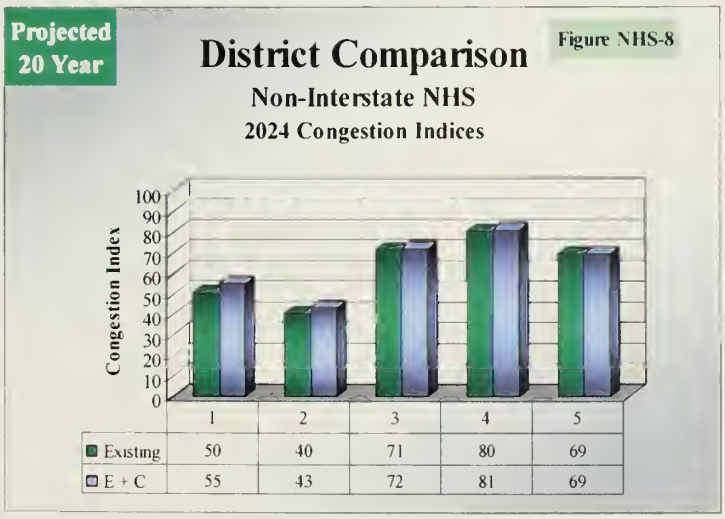
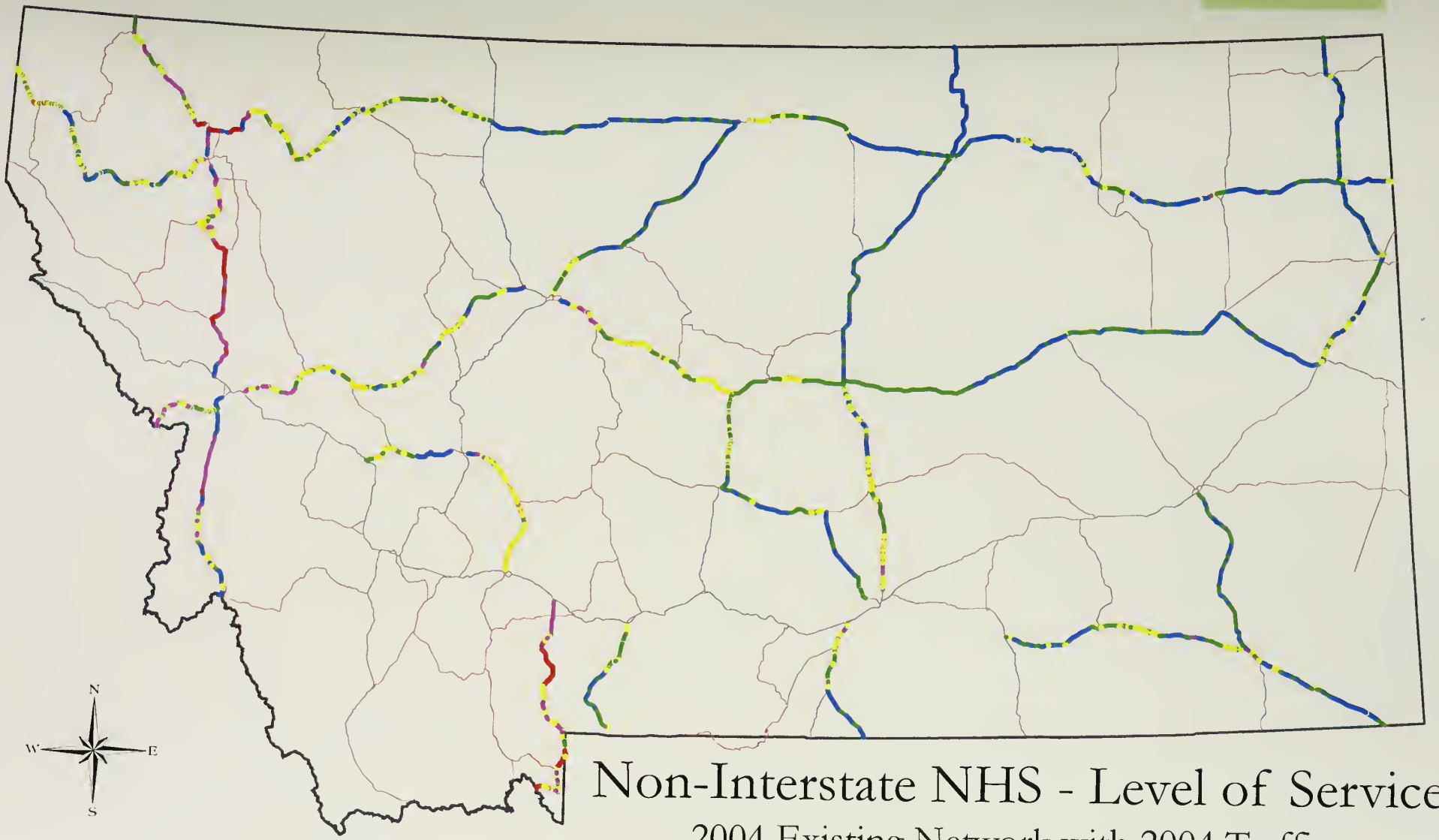

Projected 20 Year
District Comparison
Non-Interstate NHS
2024 Congestion Indices
Figure NHS-8
Congestion Index
100 90 80 70 60 50 40 30 20 10 0
1 2 3 4 5
Existing 50 40 71 80 69
E + C 55 43 72 81 69

Figure NHS-9



Non-Interstate NHS - Level of Service

2004 Existing Network with 2004 Traffic

- Level of Service A
- Level of Service B
- Level of Service C
- Level of Service D
- Level of Service E
- Level of Service F
- Interstate
- NI-NHS & Primary

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November 2005

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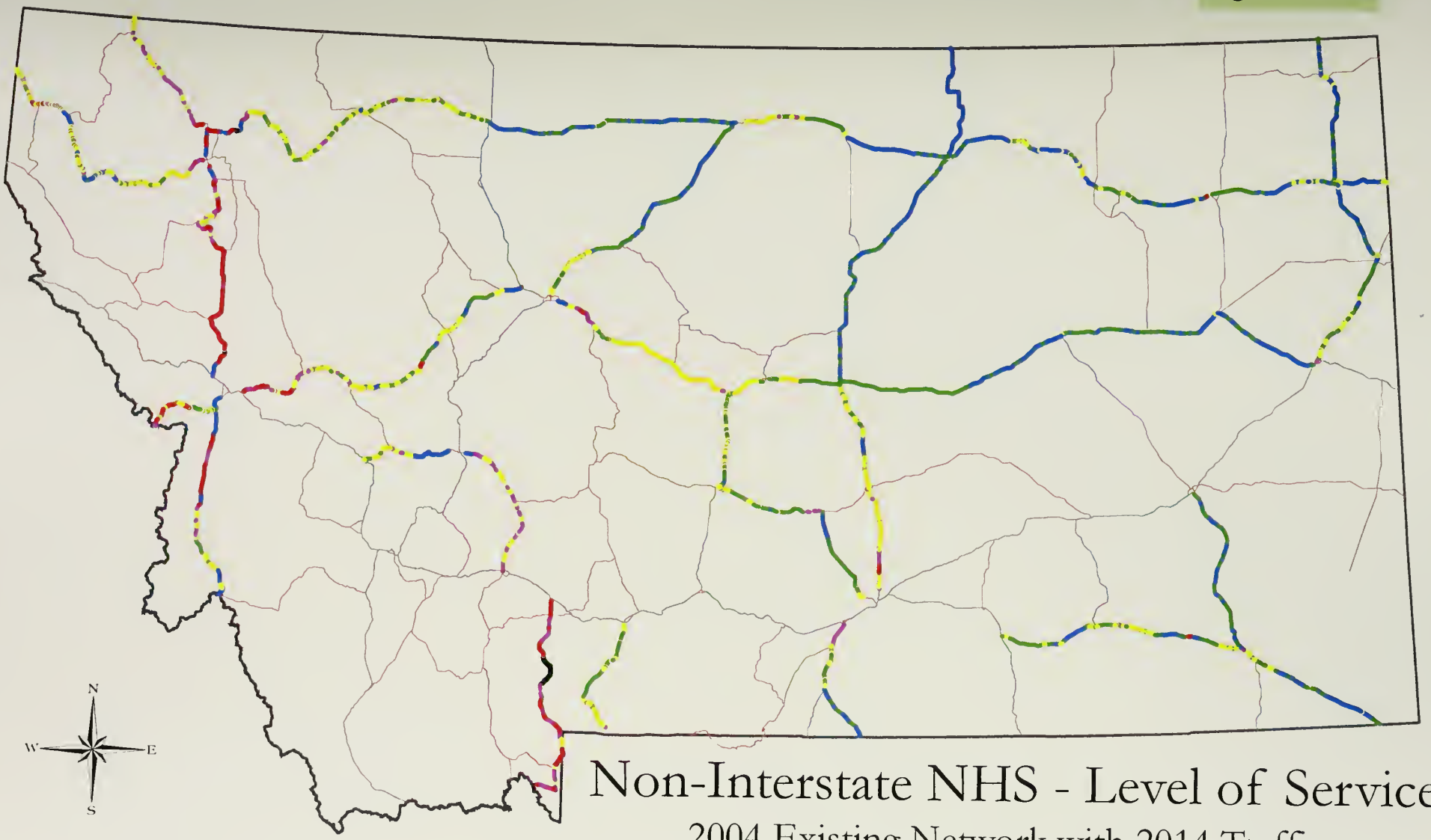
Figure NHS-10



Non-Interstate NHS - Level of Service

2004 Existing Network with 2014 Traffic

- Level of Service A
- Level of Service B
- Level of Service C
- Level of Service D
- Level of Service E
- Level of Service F
- Interstate
- NI-NHS & Primary

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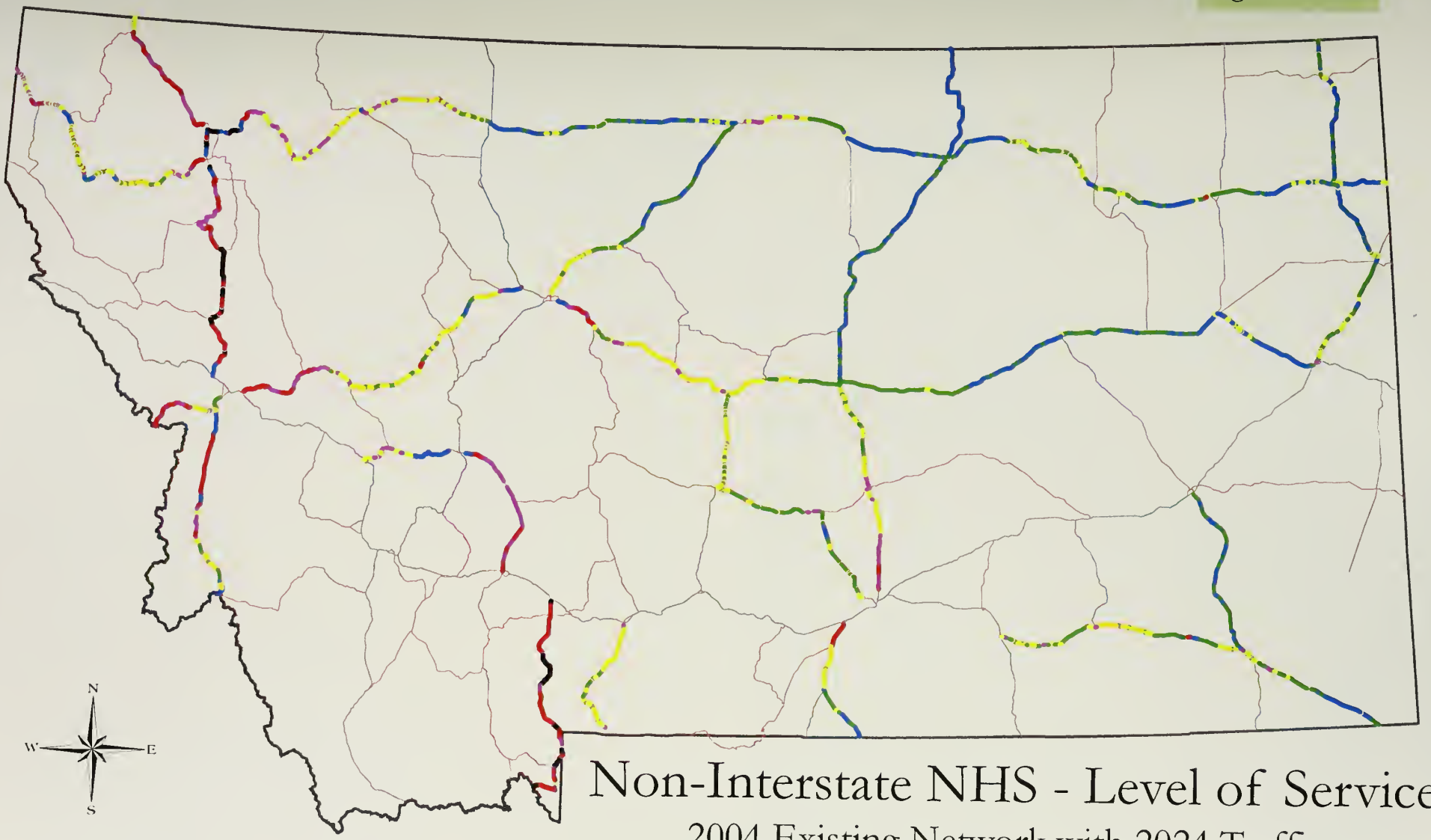

Non-Interstate NHS - Level of Service

2004 Existing Network with 2024 Traffic

- Level of Service A
- Level of Service B
- Level of Service C
- Level of Service D
- Level of Service E
- Level of Service F

- Interstate
- NI-NHS & Primary

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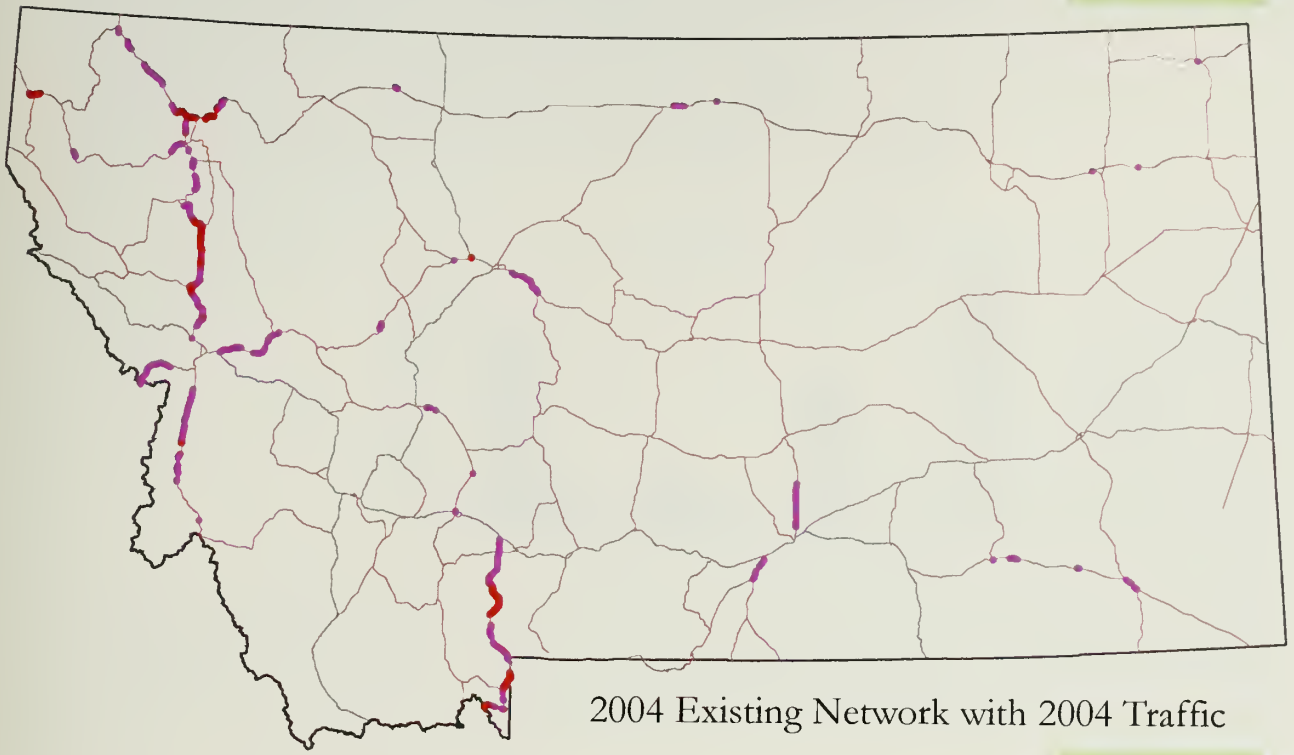
Non-Interstate NHS Level of Service "Hot Spots"

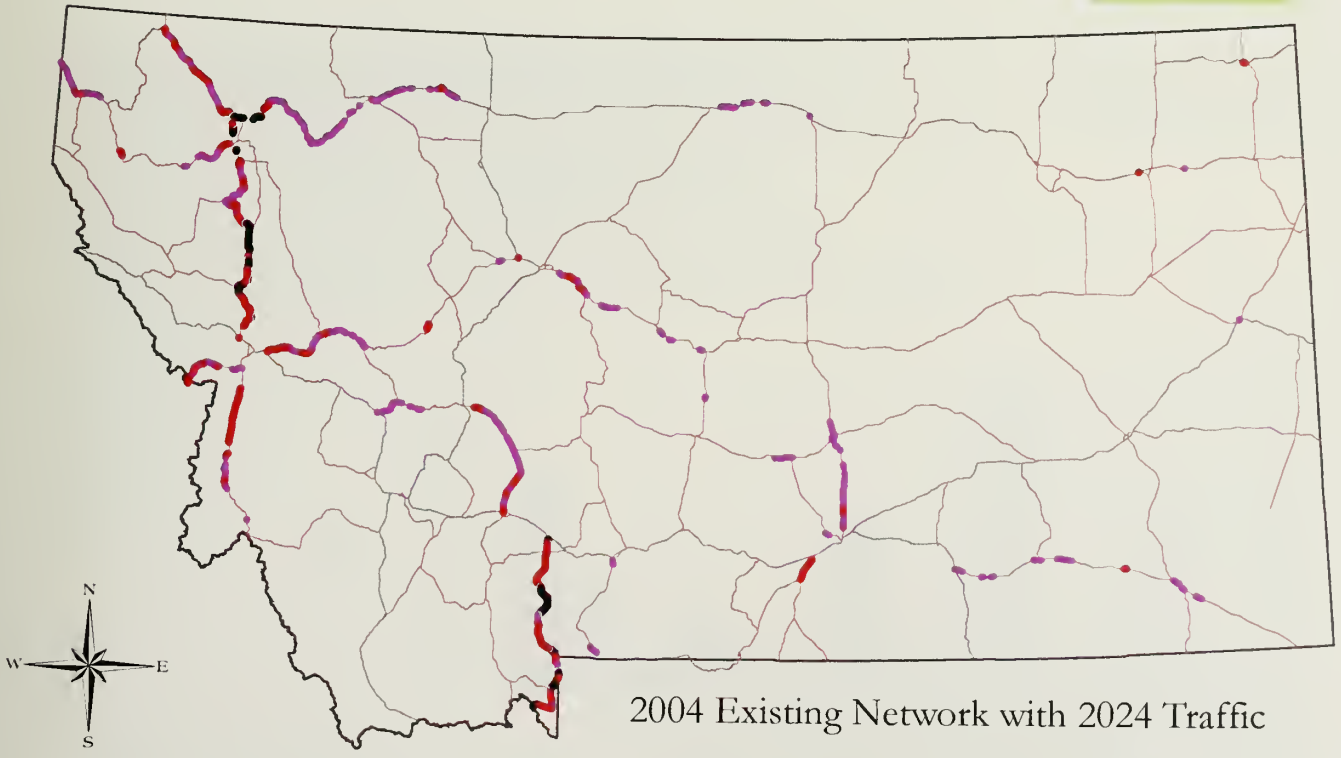
(Congestion Index < 55 - LOS D or Lower)

Figure NHS-12



2004 Existing Network with 2004 Traffic

Figure NHS-13



2004 Existing Network with 2024 Traffic

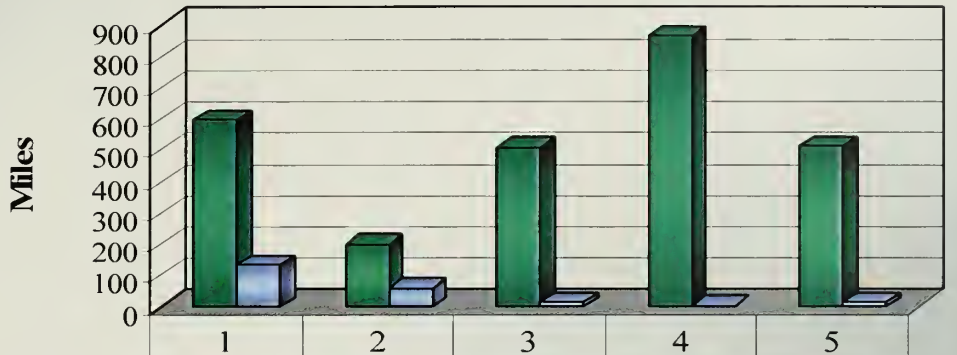
Level of Service A
Level of Service B
Level of Service C
Level of Service D
Level of Service E
Level of Service F
Interstate
NI-NHS & Primary

2004 District Comparison "Hotspots"

Figure NHS-14

Non-Interstate NHS

Congestion Index < 55 (LOS of D or lower)



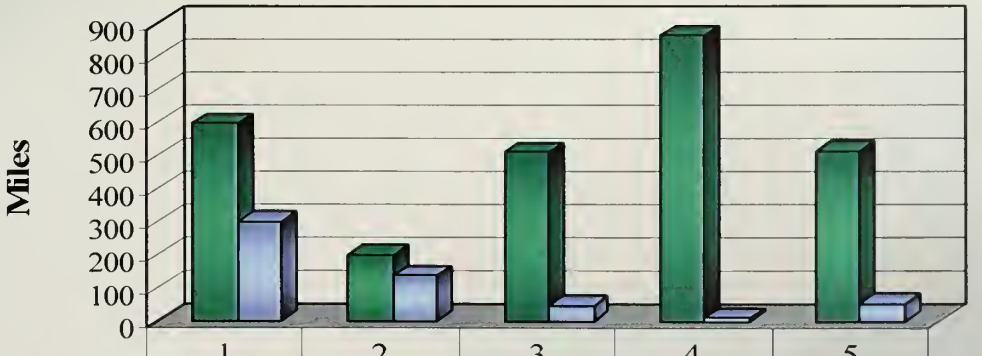
	1	2	3	4	5
Total NI-NHS Miles	598	200	509	865	512
Miles of CI < 55	133	59	13	5	14

2024 District Comparison "Hotspots"

Figure NHS-15

Non-Interstate NHS

Congestion Index < 55 (LOS of D or lower)



	1	2	3	4	5
Total NI-NHS Miles	598	200	509	865	512
Miles of CI < 55	299	135	47	9	54

Rural Primary System

General Information

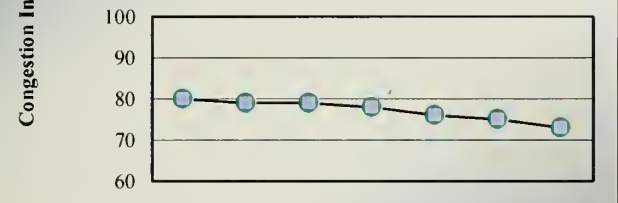
The following analysis reflects only the rural portions of the Primary System.

Existing Network

As illustrated in **Figure P-1**, the statewide existing network CI is currently 79 (LOS B) and will not fall below a CI of 73 (LOS B) within the next 20 years. The CI has remained fairly constant from 1996 to 2004.

Figure P-1

Statewide
Primary System
Congestion Indices



Year	2001	2002	2004	2009	2014	2019	2024
Existing	80	79	79	78	76	75	73
E + C	80	79	79	78	76	75	73

E+C Network

The E+C Network consists of the existing highway infrastructure plus any capacity enhancing projects in the most current TCP. This list includes ***only*** projects with potential capacity enhancing features. The routes with projects that have been let but have not yet been re-inventoried, due to lack of current TIS digital images, are highlighted in yellow:

	Project Name	Route	Uniform Project Number	Length (mi.)
1.	11.81 mi NW of Glacier Co. Line-NW	P-3	4046	8.08
2.	Weeksville-West	P-6	2014	6.7
3.	Augusta – South	P-9	4048	6.86
4.	Bowman's Corner-North	P-9	4048	10.79
5.	Sappington Jct.-South	P-13	3833	1.7
6.	Musselshell-E & W	P-14	1302	6.7
7.	East of Townsend	P-14	1510	4.8
8.	Melstone-E & W	P-14	2152	10.6
9.	Forsyth-NW	P-14	4059	11.8
10.	Rosebud Co Line-East	P-14	4060	10.2
11.	Checkerboard-Martinsdale	P-14	4803	14.76
12.	Fort Peck - NE	P-17	5157	13
13.	Angela-N & S	P-18	2461	13.34
14.	Rock Springs-N & S	P-18	2461	11.6
15.	Maxville-Drummond	P-19	1280	14.27
16.	JCT I-15-Conrad	P-21	4050	3.2
17.	Flaxville-E & W	P-22	2023	7.2
18.	Redstone – E & W	P-22	2024	15.4
19.	Baker-South	P-27	4052	11.9
20.	Lonepine – N & E	P-36	1289	10
21.	Colstrip-South	P-39	2148	9.01
22.	2000-Safety Improvmt-Hilger	P-43	4719	.46
23.	Valier-West	P-44	1291	14.3
24.	8.08 mi. N of Big Timber	P-45	1300	9.2
25.	Sportsmans Campground-E	P-46	2137	6.2
26.	Dickey Bridge-Wise River	P-46	2137	7.7
27.	Hardin-North	P-48	4064	10.4
28.	Dillon-NE	P-49	1811	1.83
29.	Sidney-West	P-51	2151	11.12
30.	Polson-East	P-52	4036	4
31.	Mission Interchange North	P-59	1298	6.97
32.	Ringling-N & S	P-59	3878	10.54
33.	Boulder-South	P-69	2019	14.9
34.	2002-curve NE of Whitehall	P-69	5378	.58
35.	Belfry-North	P-72	1016	10.96
36.	Wyoming Line-Belfry	P-72	4065	10.54
37.	Absarokee-N & S	P-78	920	7.2
38.	Columbus-South	P-78	920	8.8
39.	2000-Sfty Imp - 4.97 mi NW Redlodge	P-78	4720	.4
40.	Somers-East	P-82	3862	4.62
41.	Clearwater JCT-North	P-83	1233	13.1
42.	Dillon-No. Montana St.	P-89	1809	0.73

Individual Primary Routes

Figure P-2 (see pages 19-20) illustrates the Existing and E+C network CIs by individual route.

District Comparisons

Figure P-3 (see page 21) compares the total Primary mileage in each of the Financial Districts.

Figures P-4 through **P-8** (see page 21) compare the overall Primary system CIs in each of the Financial Districts.

Figures P-9 through **P-11** (see pages 22-24) are maps which illustrate CIs on the Existing Highway network for the entire Primary system for the years 2004 through 2024 in ten-year increments.

Hot Spots

Figures P-12 and **P-13** (see page 25) have been developed to better illustrate segments of the Primary system that currently have, or are projected to have, service levels of less than C. Only the 2004 and 2024 maps for the Existing Highway networks are shown in this report. Interim year maps for the Existing and E+C networks are available upon request from the Data and Statistics Bureau.

Figures P-14 and **P-15** (see page 26) compare the total number of miles of Primary in each district against the number of miles of Primary operating below a CI of 55 (less than LOS C).

Rural Primary System

Individual Routes

Congestion Indices

Figure P-2

Route Name	2001[1] Existing[2]	2002 Existing	2004 Existing	2004 E+C[3]	2009 Existing	2009 E+C	2014 Existing	2014 E+C	2019 Existing	2019 E+C	2024 Existing	2024 E+C
P-1	94	94	94		93		92		90		89	
P-2	87	87	89		89		88		88		88	
P-3	79	78	81	81	80	80	80	80	79	79	78	78
P-4	65	63	62		60		58		55		53	
P-6	75	72	71	72	68	68	65	65	60	61	57	57
P-7												
P-8	68	68	68	68	67	67	64	64	62	62	59	59
P-9	87	87	88	88	87	88	87	87	87	87	86	87
P-10												
P-11	75	73	75		74		72		71		69	
P-13	69	64	65	65	60	60	55	56	50	50	45	45
P-14	85	85	84	85	83	84	82	83	82	82	81	82
P-17	88	87	85	86	85	86	84	86	84	85	83	85
P-18	91	91	90	91	90	91	89	90	89	90	88	89
P-19	73	75	76		75		74		73		72	
P-20	84	83	80		79		78		77		76	
P-21	79	79	79	80	79	80	78	79	77	78	77	78
P-22	84	84	85	86	85	86	84	86	84	85	83	85
P-23												
P-25	89	89	88		87		87		87		86	
P-26	86	87	84		83		83		82		81	
P-27	84	82	82	83	82	82	81	81	80	81	80	80
P-28	76	74	72		71		70		68		66	
P-29	70	72	73		71		70		68		67	
P-30	84	83	82		82		81		81		80	
P-31	91	90	91		91		91		90		90	
P-32	89	88	89		88		88		88		87	
P-33	66	72	72		69		66		63		60	
P-35	76	72	68		65		61		57		53	
P-36	79	78	77	77	75	75	73	73	71	71	69	69
P-39	78	78	79	79	78	78	77	77	76	76	75	75
P-41	78	78	74		72		71		68		66	
P-42	91	91	89		88		88		88		87	
P-43	88	86	87	87	87	87	86	86	86	86	86	86
P-44	85	85	85	85	84	85	84	84	83	84	83	83
P-45	84	85	85	85	84	85	84	84	83	84	83	84
P-46	85	87	84	85	83	84	82	82	80	81	79	80
P-47	84	82	82		81		81		80		79	
P-48			83	84	83	84	82	83	81	82	81	82
P-49	71	73	73	73	72	72	71	71	70	70	68	69
P-50	91	89	94		93		92		90		88	
P-51	91	91	91	91	91	91	90	90	90	90	90	90
P-52	44	41	40	40	36	36	31	31	28	28	23	23
P-54	88	88	87		86		86		86		85	
P-55	74	73	71		69		67		65		62	

Rural Primary System

Individual Routes

Congestion Indices

Route Name	2001[1] Existing[2]	2002 Existing	2004 Existing	2004 E+C[3]	2009 Existing	2009 E+C	2014 Existing	2014 E+C	2019 Existing	2019 E+C	2024 Existing	2024 E+C
P-56	73	74	74		72		73		68		67	
P-57	83	65	76	75	76	75	73	71	73	74	73	73
P-58	68	68	64		60		68		56		53	
P-59	90	68	69	88	68	88	87	88	82	87	85	86
P-60	85	83	83	84	83	84	83	84	83	83	83	83
P-65	39	48	48		48		48		48		27	
P-66	83	83	82		83		82		81		80	
P-67	74	74	73		73		73		72		71	
P-68	78	78	73		76		73		73		72	
P-69	80	68	80	83	76	79	76	79	74	79	72	73
P-72	76	74	72	79	69	73	68	71	62	68	59	64
P-75	76	74	76		71		76		76		75	
P-78	67	65	65	87	61	84	57	59	53	59	49	52
P-80	68	68	68		68		68		67		87	
P-81	68	67	68		68		68		83		87	
P-82	52	45	48	55	45	50	40	45	48	41	33	37
P-83	54	55	55	59	53	41	51	52	50	50	47	47
P-84	67	68	62	62	57	57	53	53	48	84	41	41
P-86	76	74	76		69		62		64		62	
P-87	67	76	65		60		56		51		46	
P-89	62	68	68	84	61	62	56	84	68	59	56	57
P-91	65	65	65		64		64		62		60	
P-95	75	74	76		73		73		73		72	
P-96	74	72	72		73		76		69		68	
P-97			76		76		69		68		67	
P-98	94	93	94		94		94		93		93	

CI's in **red** reflect congestion indices of LOS D or lower (CI <55)

Routes in **blue** represent those routes of which portions are on both NI-NHS and the Primary system Only the CIs for the Primary segments are reflected in this table.

[1]Traffic Year

[2]Existing Highway Network

[3]Existing plus Committed Highway Network

No capacity enhancing projects planned for this route

Primary routes located in urban areas; no CI's were computed

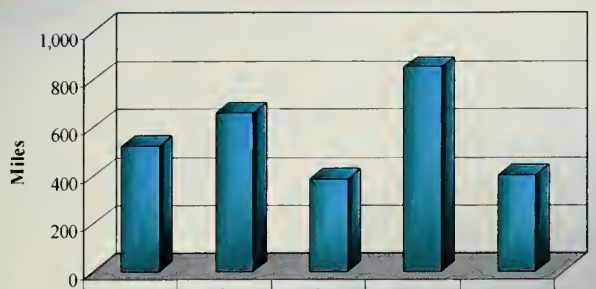
No general inventory data available; no CI's were computed

Projects on route have been let. Route will continue to show as having a committed project until the route has been re-inventoried.

Rural Primary

District Mileage Comparison
Primary System

Figure P-3

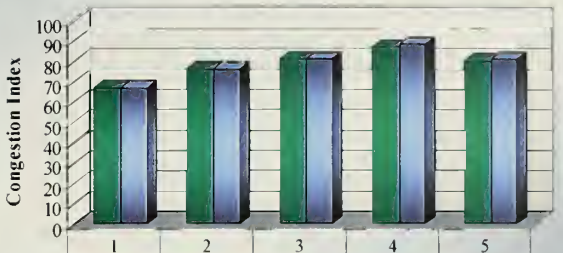


	1	2	3	4	5
Total Primary Miles	522	658	386	848	400

Current

District Comparison
Primary System
2004 Congestion Indices

Figure P-4

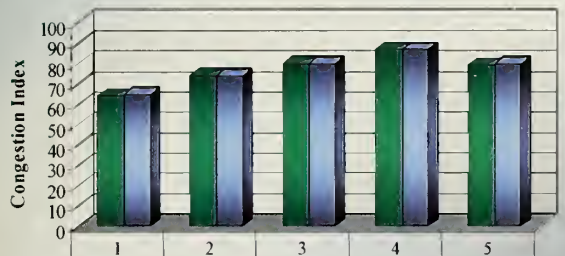


	1	2	3	4	5
Existing	67	76	81	87	80
E + C	67	76	81	88	81

Projected 5 Year

District Comparison
Primary System
2009 Congestion Indices

Figure P-5

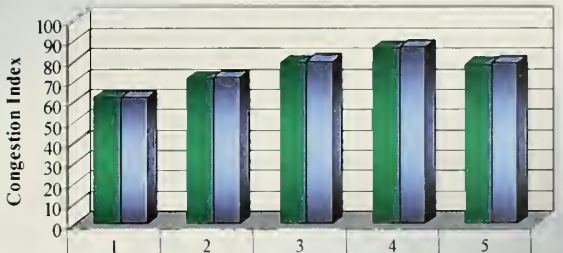


	1	2	3	4	5
Existing	64	74	80	87	79
E + C	65	74	80	87	80

Projected 10 Year

District Comparison
Primary System
2014 Congestion Indices

Figure P-6

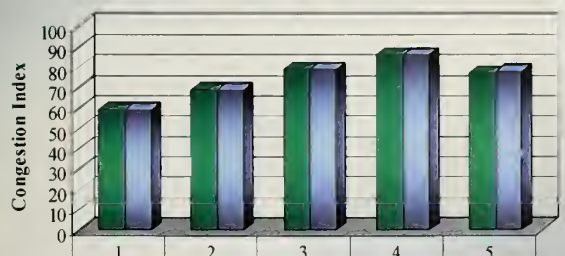


	1	2	3	4	5
Existing	62	71	79	86	78
E + C	62	72	80	87	79

Projected 15 Year

District Comparison
Primary System
2019 Congestion Indices

Figure P-7

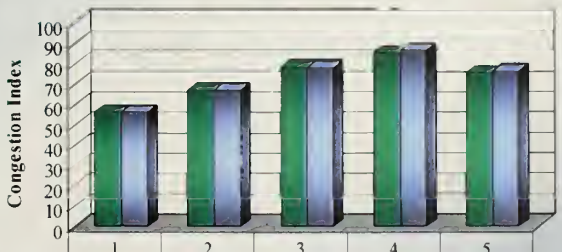


	1	2	3	4	5
Existing	59	69	79	86	77
E + C	59	69	79	86	78

Projected 20 Year

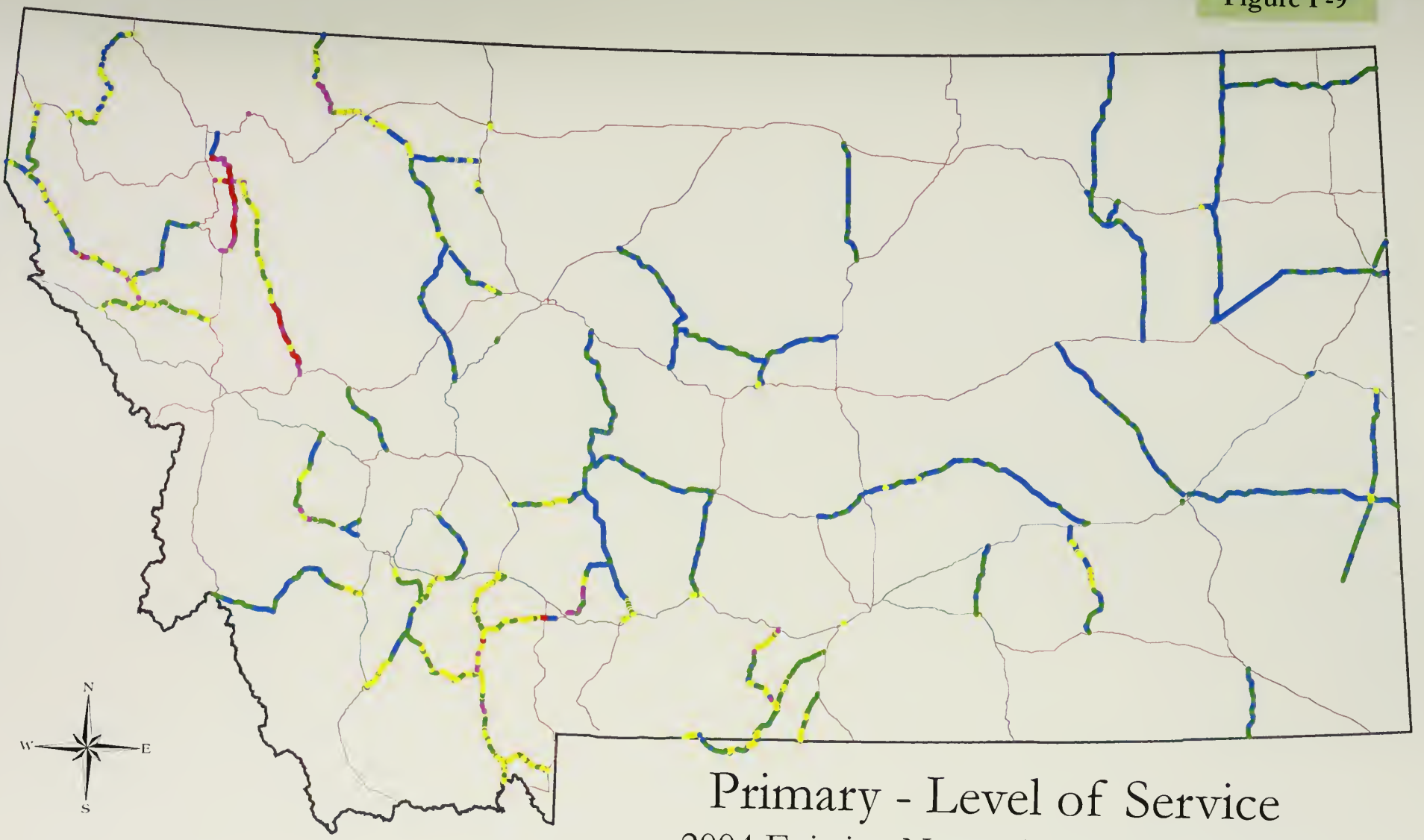
District Comparison
Primary System
2024 Congestion Indices

Figure P-8



	1	2	3	4	5
Existing	56	67	78	85	75
E + C	56	67	78	86	76

Figure P-9



Primary - Level of Service

2004 Existing Network with 2004 Traffic

- Level of Service A
- Level of Service B
- Level of Service C
- Level of Service D
- Level of Service E
- Level of Service F
- Interstate
- NI-NHS & Primary

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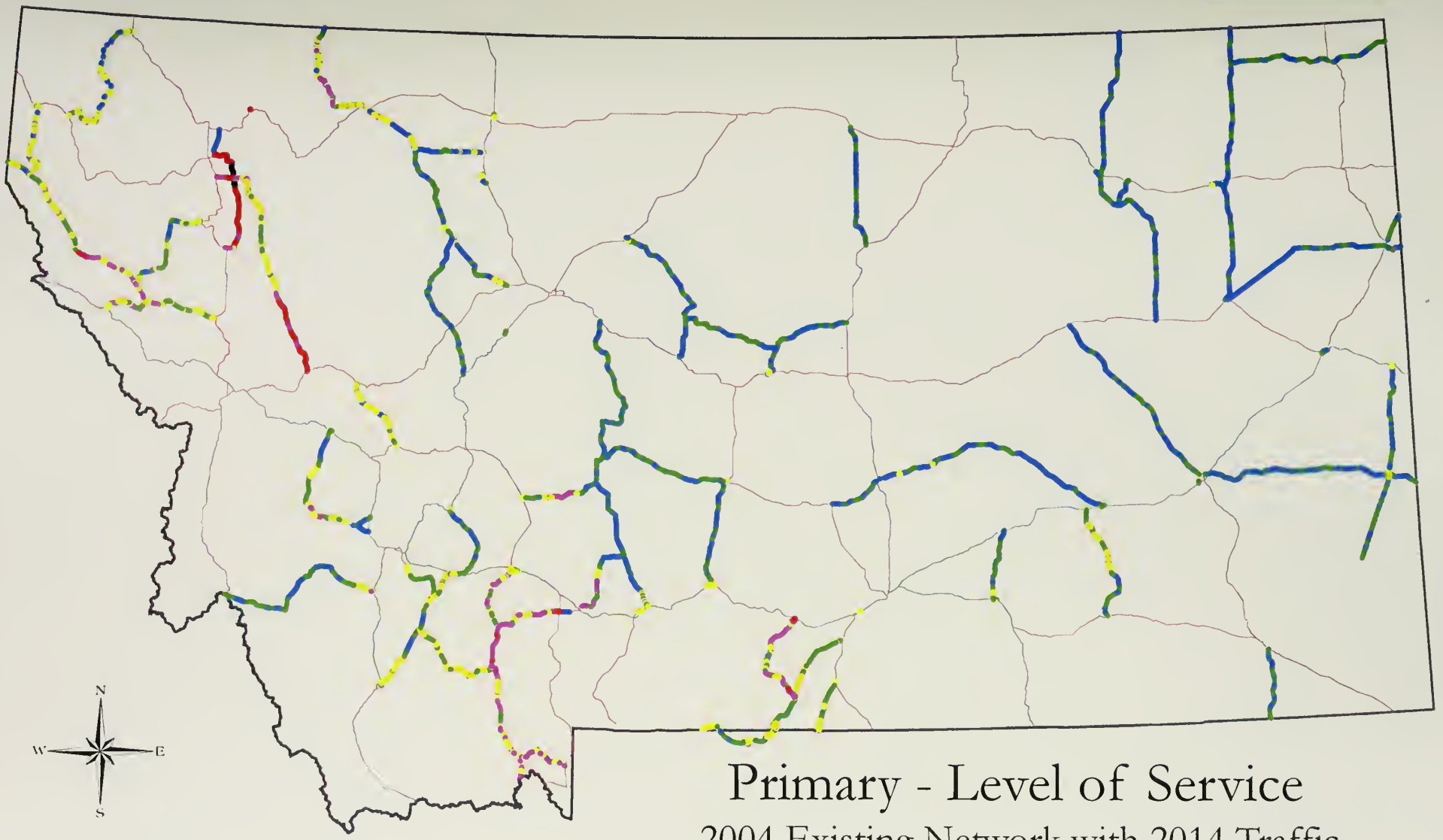
Figure P-10



Primary - Level of Service

2004 Existing Network with 2014 Traffic

- Level of Service A
- Level of Service B
- Level of Service C
- Level of Service D
- Level of Service E
- Level of Service F
- Interstate
- NI-NHS & Primary

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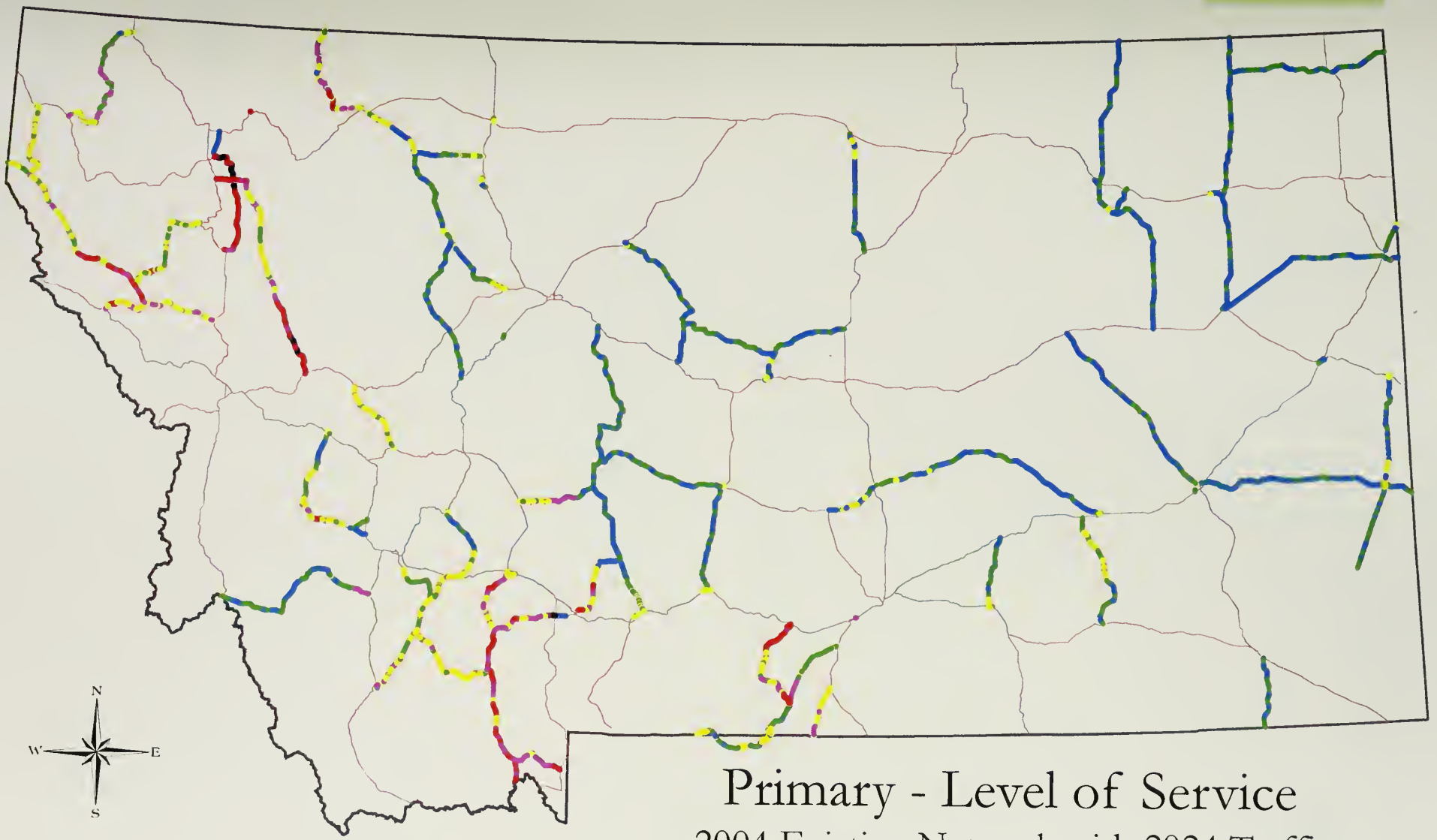
Figure P-11



Primary - Level of Service

2004 Existing Network with 2024 Traffic

- Level of Service A
- Level of Service B
- Level of Service C
- Level of Service D
- Level of Service E
- Level of Service F
- Interstate
- NI-NHS & Primary

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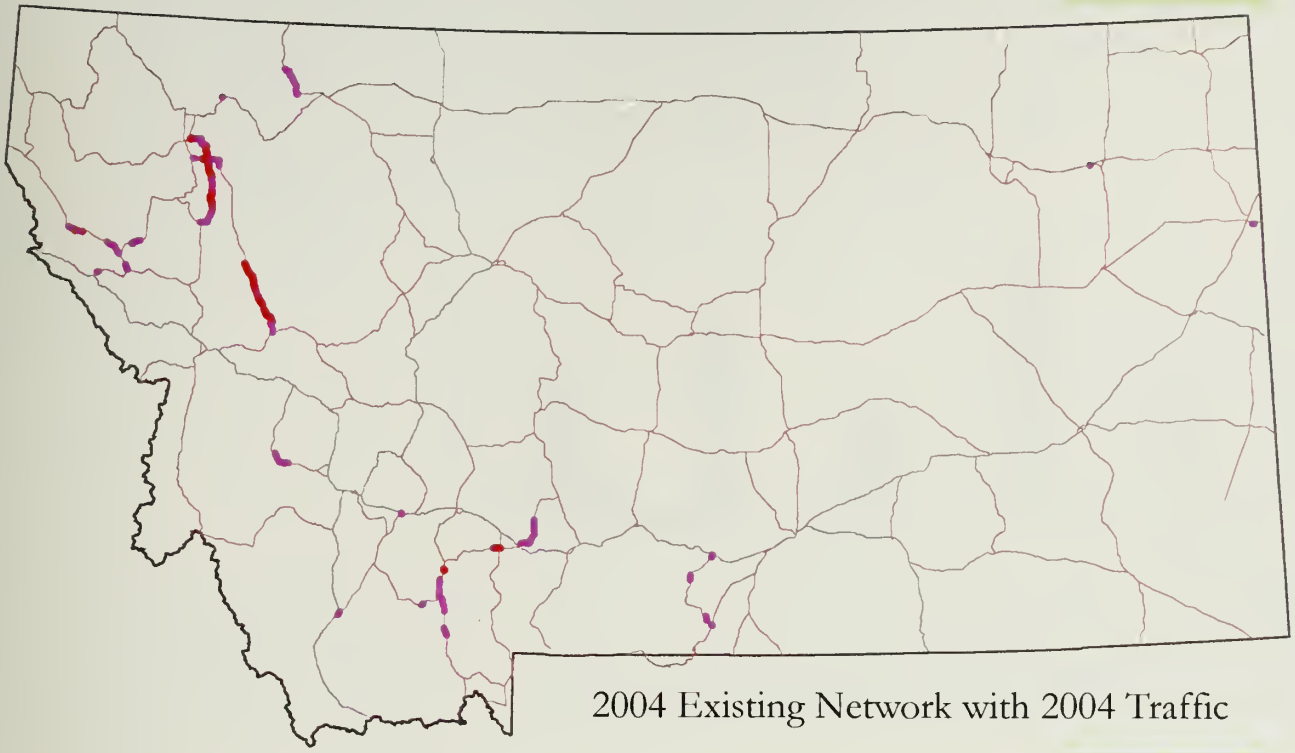
Primary
Level of Service "Hot Spots"

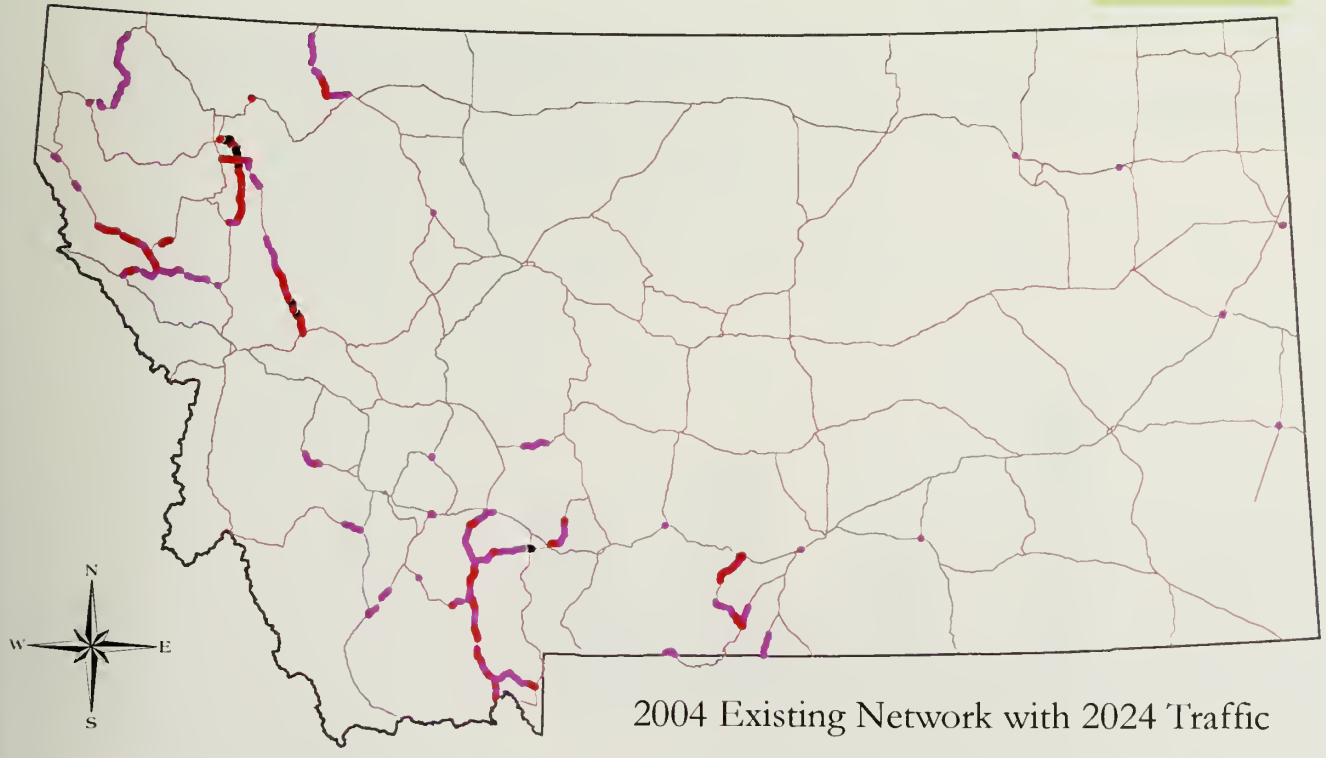
(Congestion Index < 55 - LOS D or Lower)

Figure P-12



2004 Existing Network with 2004 Traffic

Figure P-13



2004 Existing Network with 2024 Traffic

Level of Service A
Level of Service B
Level of Service C
Level of Service D
Level of Service E
Level of Service F
Interstate
NI-NHS & Primary

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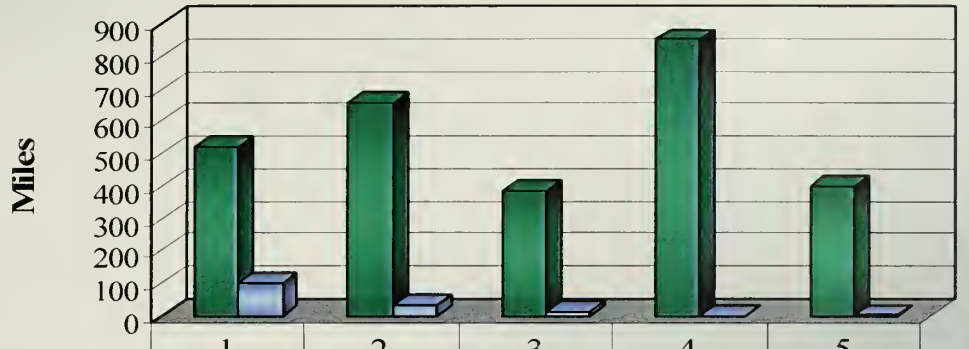
2004 District Comparison "Hotspots"

Figure P-14

Primary System

Congestion Index < 55 (LOS of D or lower)



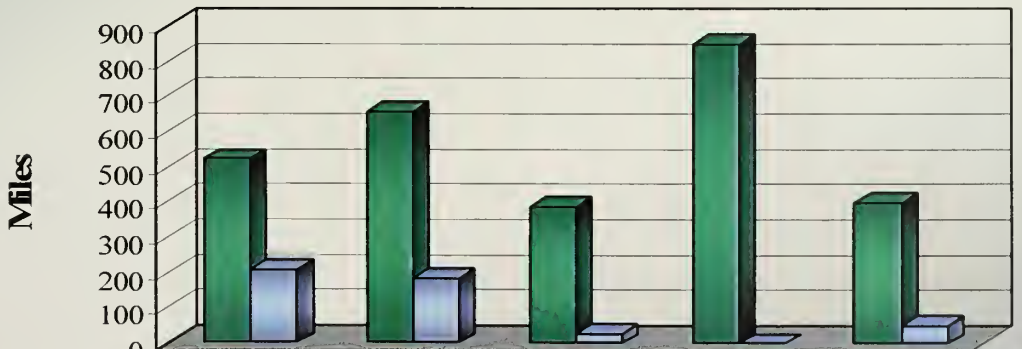
	1	2	3	4	5
Total Primary Miles	522	658	386	848	400
Miles of CI < 55	101	32	15	0	4

2024 District Comparison "Hotspots"

Figure P-15

Primary System

Congestion Index < 55 (LOS of D or lower)



	1	2	3	4	5
Total Primary Miles	522	658	386	848	400
Miles of CI < 55	207	182	29	1	49

Secondary System

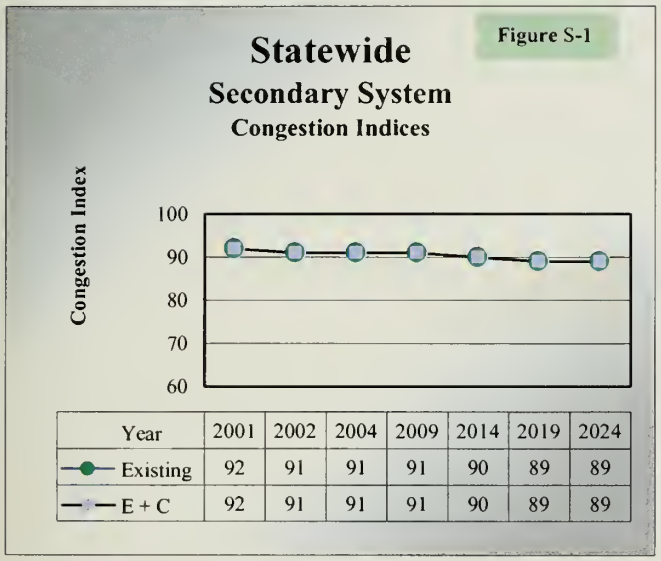
General Information

As stated in the MDT Systems Action Policy, a Secondary route cannot pass through or enter an urban area. Therefore, all Secondary routes are considered rural in nature and were analyzed as such.

Existing Network

As illustrated in **Figure S-1**, the statewide existing network CI is currently 91 (LOS A) and will not fall below a CI of 89 (LOS A) within the next 20 years.

Figure S-1



Year	2001	2002	2004	2009	2014	2019	2024
Existing	92	91	91	91	90	89	89
E + C	92	91	91	91	90	89	89

E+C Network

The E+C Network consists of the existing highway infrastructure plus any capacity enhancing projects in the most current TCP. This list includes ***only*** projects with potential capacity enhancing features. The routes with projects that have been let but have not yet been re-inventoried, due to lack of current TIS digital images, are highlighted in yellow:

	Project Name	Route	Uniform Project Number	Length (mi.)
1.	Florence-East	S-203	4854	2.1
2.	Safety Improvement-E of Manhattan	S-205	4437	0.8
3.	Jct US 191-Whitewater	S-208	4481	9.5
4.	Conrad-SW	S-219	2945	3.4
5.	2000-Slope FLTN-S of Jct S-279	S-231	4706	.6
6.	2002 Curve-N of Havre	S-232	5302	.5
7.	24.86 mi N of Havre-North	S-233	4479	9.05
8.	Jct. MT 85-East (W. section)	S-235	4470	1.95
9.	2.49 mi N. of Ryegate – N.	S-238	4850	5.27
10.	Hobson-Utica	S-239	4485	11.68
11	22.99 mi NW of Terry-North	S-253	2824	13.6
12.	W of Richey - West	S-254	4483	11.1
13	8.7 mi N of Wibaux-North	S-261	2840	4.53
14.	Richland County Line-North	S-261	4482	3.8
15.	Powell Co. Line-North	S-271	4468	10.6
16	Rocker Interchange-North	S-276	4473	1.2
17.	7.46 mi S Broadwater Co. S.	S-284	4474	7.34
18.	Martinsdale - North	S-294	4475	2.12
19	Musselshell Co. Line-NW	S-310	2974	7.3
20	24.86 mi S of Ekalaka-South	S-323	4138	12.25
21	Grant-West	S-324	4476	8.7
22.	4.97 mi S of Polson-South	S-354	3606	7.19
23.	4.35 mi E of Columbus - East	S-421	4486	2.74
24.	Carbon Co. Line E.	S-421	4487	2.04
25.	Canyon Ferry Road	S-430	4480	3.83
26.	2000-Saftey Improvement-2.49 mi E Jct I-15	S-453	4725	.75
27.	1.24 mi N of Jct. MT 200-North	S-472	4467	6.8
28.	Blue Slide Road	S-472	2976	2.3
29.	East River Road-S of Emigrant	S-540	3885	4

Individual Secondary Routes

Figure S-2 (see pages 29-33) illustrates the Existing and E+C network CIs by individual route.

District Comparisons

Figure S-3 (see page 34) compares the total Secondary mileage in each of the Financial Districts.

Figures S-4 through **S-8** (see page 34) compare the overall Secondary system CIs in each of the districts.

Figure S-9 through **S-11** (see pages 35-37) are maps which illustrate CIs on the existing highway network for the entire Secondary system for the years 2004 through 2024 in ten year increments.

Hot Spots

Figures S-12 and **S-13** (see page 38) have been developed to better illustrate segments of the Secondary system that currently have, or are

projected to have, service levels of less than C. Only the 2004 and 2024 maps for the existing highway networks are shown in this report. Interim year maps for the Existing and E+C networks are available upon request from the Data and Statistics Bureau.

Figures S-14 and **S-15** (see page 39) compare the total number of miles of Secondary in each district against the number of miles of Secondary operating below a CI of 55 (less than LOS C).

Missing Data Report

Due to the unavailability of inventory data, some of the routes on the Secondary system could not be analyzed. It should be understood that the CIs for these routes were not considered in the analysis either at the statewide or district level. Every attempt will be made to gather the data and include the analysis for these routes in the 2007 CoMS report.

The routes which were not available for this report are as follows:

Route	Length (mi)	Route	Length (mi)
S-398	7.8	S-571	1.2
S-418	15.9	S-572	1.8
S-569	22.2	S-573	14.9
S-570	.2		

Secondary System

Individual Routes

Congestion Indices

Figure S-2

Route Name	2001[1] Existing[2]	2002 Existing	2004 Existing	2004 E+C[3]	2009 Existing	2009 E+C	2014 Existing	2014 E+C	2019 Existing	2019 E+C	2024 Existing	2024 E+C
S-201	93	92	84		84		82		82		81	
S-202	87	87	89		97		87		87		86	
S-203	71	70	95	97	89	92	58	58	52	53	47	48
S-204	92	99	98		89		89		89		98	
S-205	72	70	72	72	70	78	95	68	89	66	64	64
S-206	99	55	58		54		50		93		43	
S-207	99	99	89		89		89		97		97	
S-208	87	87	97	95	97	97	97	97	89	97	96	97
S-209	93	99	89		89		89		63		59	
S-210	95	95	89		89		92		70		77	
S-211	70	72	70		63		89		95		62	
S-212	70	93	91		91		70		70		75	
S-213	91	70	89		89		89		89		87	
S-214	99	92	93		93		92		92		92	
S-215	99	76	89		89		95		89		89	
S-217	99	99	89		97		97		97		97	
S-218	99	66	95		89		93		91		94	
S-219	93	93	93	93	93	93	92	92	92	92	91	91
S-220	91	99	93		89		89		97		86	
S-221	87	87	92		93		89		89		88	
S-222	70	75	70		75		71		71		69	
S-223	92	99	93		93		91		89		90	
S-224	95	95	95		91		91		93		93	
S-225	95	95	95		95		91		94		94	
S-226	93	91	91		91		95		89		89	
S-227	87	87	97		89		95		84		83	
S-228	92	92	92		93		89		89		89	
S-229	66	66	95		63		91		58		56	
S-231	66	92	92	93	58	60	58	58	52	53	48	49
S-232	91	91	95	60	89	60	89	60	89	60	88	88
S-233	87	87	97	97	97	97	95	97	89	60	95	96
S-234	66	66	95		95		95		89		84	
S-235	70	99	70	78	71	77	72	75	70	78	67	70
S-236			95		89		91		63		94	
S-237	70	99	95		95		91		53		93	
S-238	93	93	93	93	93	93	93	93	93	93	93	93
S-239	99	95	95	95	95	95	95	95	89	95	94	95
S-240	87	87	95		95		89		89		89	
S-241	99	92	93		93		93		93		93	
S-243	87	87	97		97		97		97		96	
S-244	92	92	92		92		92		93		91	
S-245	99	99	97		97		87		89		96	
S-246	95	99	91		91		91		93		93	
S-247	100	100	100		100		100		100		100	
S-248	92	92	92		92		92		93		91	
S-249	88	93	80		79		79		78		77	
S-250	94	93	94		94		93		93		93	
S-251	96	95	96		96		95		95		95	

Secondary System

Individual Routes

Congestion Indices

Route Name	2001[1] Existing[2]	2002 Existing	2004 Existing	2004 E+C[3]	2009 Existing	2009 E+C	2014 Existing	2014 E+C	2019 Existing	2019 E+C	2024 Existing	2024 E+C
S-252	94	96	95		95		94		91		94	
S-253	95	97	95	95	95	95	94	95	91	94	94	94
S-254	94	90	93	94	91	93	91	93	93	93	92	92
S-255	97	95	95		95		91		93		94	
S-257	81	80	78		87		78		78		75	
S-258	88	90	92		92		92		91		81	
S-259	94	90	93		92		92		92		91	
S-260	78	77	78		87		78		78		73	
S-261	96	96	96	96	95	95	95	95	95	95	95	95
S-263	79	75	86		72		86		86		63	
S-269	66	80	92		91		53		91		45	
S-271	94	90	91	92	91	92	96	94	96	94	89	90
S-272	78	82	86		86		92		78		69	
S-273	90	89	86		86		91		86		85	
S-275	68	71	91		86		86		86		65	
S-276	83	80	93	93	92	92	91	94	86	96	79	79
S-277	99	99	96		96		96		96		98	
S-278	85	97	86		87		86		91		83	
S-279	78	79	78		78		86		78		68	
S-280	80	80	78		78		78		86		71	
S-282	66	80	91		91		91		53		51	
S-283	93	92	92		92		91		91		90	
S-284	89	90	96	96	96	96	96	96	92	96	87	87
S-285	96	95	96		96		95		95		94	
S-286	89	86	86		85		84		92		80	
S-287	83	82	78		87		86		78		66	
S-288	80	80	97		78		86		78		66	
S-290	88	88	95		85		93		92		80	
S-292			78		72		78		86		63	
S-294	97	96	95	95	95	95	94	94	94	94	93	93
S-295	94	90	93		92		92		91		91	
S-297	98	98	96		96		96		96		98	
S-298	81	80	94		83		93		92		82	
S-300	97	97	96		96		96		95		95	
S-302	87	89	86		86		86		86		84	
S-306	90	90	96		86		86		86		85	
S-308	85	80	83		86		78		78		73	
S-310	98	96	91	97	96	96	96	96	96	96	96	96
S-311	95	95	94		91		91		93		93	
S-313			86		86		91		91		87	
S-314	88	88	86		86		91		82		81	
S-317	59	58	91		53		50		45		42	
S-320	98	98	91		91		97		91		97	
S-322	94	92	91		91		91		91		91	
S-323	97	97	91	97	91	97	95	96	96	96	96	96
S-324	94	91	93	93	92	92	91	94	96	96	89	89
S-325	98	98	96		96		97		97		97	
S-326	97	97	91		91		97		96		96	
S-327	98	98	91		91		97		91		96	

Secondary System

Individual Routes

Congestion Indices

Route Name	2001[1] Existing[2]	2002 Existing	2004 Existing	2004 E+C[3]	2009 Existing	2009 E+C	2014 Existing	2014 E+C	2019 Existing	2019 E+C	2024 Existing	2024 E+C
S-328	99	100	96		96		99		97		99	
S-330	93	97	94		94		93		93		92	
S-331	86	97	98		97		99		97		86	
S-332	97	97	97		97		97		98		96	
S-334	92	91	91		91		90		90		90	
S-335	96	96	93		93		99		92		92	
S-336	99	97	97		96		97		97		99	
S-338	96	96	97		98		98		98		96	
S-340	97	97	98		98		98		98		96	
S-341	99	97	97		97		99		99		99	
S-342	68	91	98		96		64		93		62	
S-343	98	96	97		97		97		98		96	
S-344	93	93	93		92		92		91		91	
S-345	79	97	77		91		91		97		63	
S-346	84	97	91		83		82		91		80	
S-347	81	97	90		96		78		74		72	
S-348	95	97	92		92		91		90		89	
S-350	94	96	98		98		98		98		96	
S-352	85	85	95		91		84		93		82	
S-354	86	97	91	85	91	84	93	84	82	82	81	81
S-357	93	97	98		98		97		97		87	
S-358	94	97	93		93		93		92		92	
S-359	85	97	93		99		90		78		75	
S-360	90	97	99		90		97		98		88	
S-363	98	96	98		96		96		96		98	
S-365	96	97	98		96		98		98		95	
S-366	98	97	97		97		97		98		96	
S-370	83	82	91		96		96		73		70	
S-373	68	97	93		56		56		51		47	
S-374	97	99	93		93		93		92		92	
S-379	96	96	97		97		96		96		96	
S-381	98	97	95		96		95		94		94	
S-382	89	97	98		97		97		96		85	
S-384	93	93	93		92		91		91		90	
S-386	81	97	82		82		91		91		80	
S-387	85	83	84		84		83		83		83	
S-391	97	97	97		97		97		96		96	
S-393	80	78	77		75		73		71		69	
S-396	98	98	99		99		99		98		98	
S-398	Images not available											
S-399	87	86	89		88		88		87		87	
S-400	98	98	98		98		97		97		97	
S-401	84	85	82		82		81		80		79	
S-405	93	92	96		96		95		95		95	
S-408	92	91	92		92		91		91		90	
S-409	98	97	98		98		98		98		97	
S-411	97	97	56		56		52		48		46	
S-412	54	54	74		51		50		48		46	
S-413	99	97	99		97		99		99		99	

Secondary System

Individual Routes

Congestion Indices

Route Name	2001[1] Existing[2]	2002 Existing	2004 Existing	2004 E+C[3]	2009 Existing	2009 E+C	2014 Existing	2014 E+C	2019 Existing	2019 E+C	2024 Existing	2024 E+C
S-416			63		59		54		49		44	
S-417	97	97	95		95		94		94		94	
S-418	Images not available											
S-419	81	81	81		79		78		76		75	
S-420	81	84	81		81		80		79		78	
S-421	84	83	82	82	81	81	80	80	79	79	78	78
S-422	95	95	95		94		94		93		92	
S-424	64	63	61		58		55		52		48	
S-426	97	97	96		96		95		95		94	
S-427	93	94	94		93		93		93		92	
S-430	64	63	58	62	54	58	49	54	46	50	42	46
S-431	93	93	92		91		91		90		90	
S-432	98	98	98		98		98		98		98	
S-434	85	85	84		84		83		82		80	
S-435	96	96	96		95		94		94		93	
S-437	98	97	98		98		98		98		97	
S-438	97	97	94		94		94		94		93	
S-441	90	90	87		86		85		84		83	
S-444	96	95	96		95		95		95		94	
S-446	92	91	89		88		88		88		87	
S-447	94	95	94		94		94		93		93	
S-448	98	98	98		98		98		98		97	
S-449	98	98	98		98		97		97		97	
S-451	86	87	88		87		87		86		85	
S-453	72	75	69	70	66	67	63	64	60	62	58	59
S-454	81	81	83		83		82		82		82	
S-457	99	98	97		97		97		97		97	
S-462	98	98	99		99		99		99		99	
S-463	91	92	92		91		91		90		90	
S-464	89	87	87		86		86		85		84	
S-466	90	87	89		88		87		87		86	
S-467	98	99	98		97		97		97		96	
S-470	97	97	97		97		96		96		96	
S-471	89	89	91		90		89		89		88	
S-472	87	87	79	80	77	78	75	76	72	74	69	71
S-473	73	74	78		76		73		70		66	
S-474	64	68	68		67		66		64		63	
S-478	88	87	87		86		86		85		85	
S-480	95	94	95		94		94		93		93	
S-482	85	85	76		75		73		72		71	
S-484	96	96	96		96		95		95		95	
S-486	82	81	84		83		82		81		80	
S-487	50	50	50		47		44		40		39	
S-489	90	90	89		88		88		88		87	
S-493	94	94	95		95		95		95		94	
S-494	97	96	97		97		97		97		97	
S-500	96	96	96		96		95		95		95	
S-503	78	80	79		78		76		75		73	
S-504	99	99	99		99		99		99		98	

Secondary System

Individual Routes

Congestion Indices

Route Name	2001[1] Existing[2]	2002 Existing	2004 Existing	2004 E+C[3]	2009 Existing	2009 E+C	2014 Existing	2014 E+C	2019 Existing	2019 E+C	2024 Existing	2024 E+C
S-507	85	85	85		85		85		84		84	
S-508	89	86	90		89		88		87		86	
S-509	97	96	97		96		96		95		95	
S-511	94	93	94		93		93		93		92	
S-512	98	96	96		96		96		95		95	
S-513	93	91	90		90		89		89		88	
S-516	90	91	92		92		91		91		91	
S-517	92	92	91		91		91		91		90	
S-518	71	72	70		67		65		62		59	
S-522	63	61	58		57		55		52		50	
S-528	97	95	97		97		97		97		96	
S-529	97	96	96		96		95		95		95	
S-531	85	84	85		84		82		81		79	
S-532	85	86	85		84		82		81		79	
S-533	81	80	80		79		78		77		76	
S-534	97	97	98		97		97		97		97	
S-537	97	97	97		97		97		97		97	
S-540	86	85	85	86	84	84	82	82	80	80	78	78
S-541	98	98	98		98		98		97		97	
S-543	96	96	96		96		95		95		95	
S-544	96	96	95		95		95		94		94	
S-547	97	96	97		96		96		96		96	
S-548	59	58	56		53		47		40		37	
S-551	93	92	91		91		90		90		89	
S-552	96	96	94		94		94		93		93	
S-556	97	97	95		95		94		94		93	
S-559	93	91	89		88		87		86		85	
S-564	98	98	97		96		96		96		95	
S-565	91	91	91		90		90		90		90	
S-566	97	98	94		93		93		92		92	
S-567			84		83		82		81		81	
S-568	91	90	90		89		89		89		88	
S-569	Images not available											
S-570												
S-571												
S-572												
S-573												

CI's in red reflect congestion indices of LOS D or lower (CI <55)

[1] Traffic year

[2] Existing Highway Network

[3] Existing plus Committed Highway Network

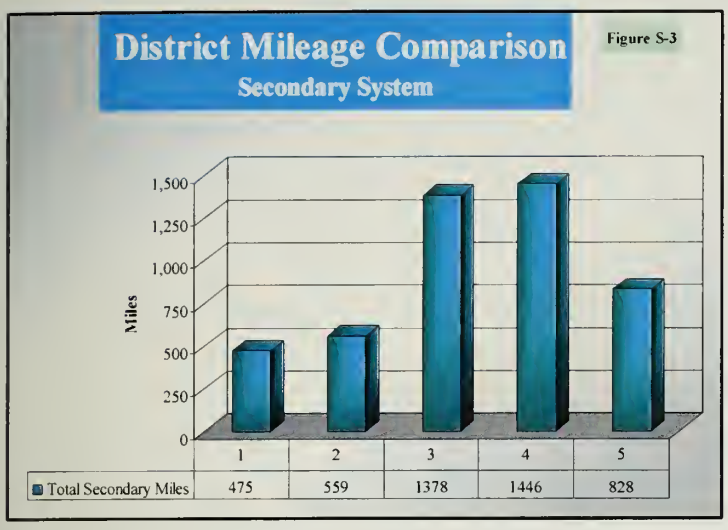
No capacity enhancing projects planned for this route.

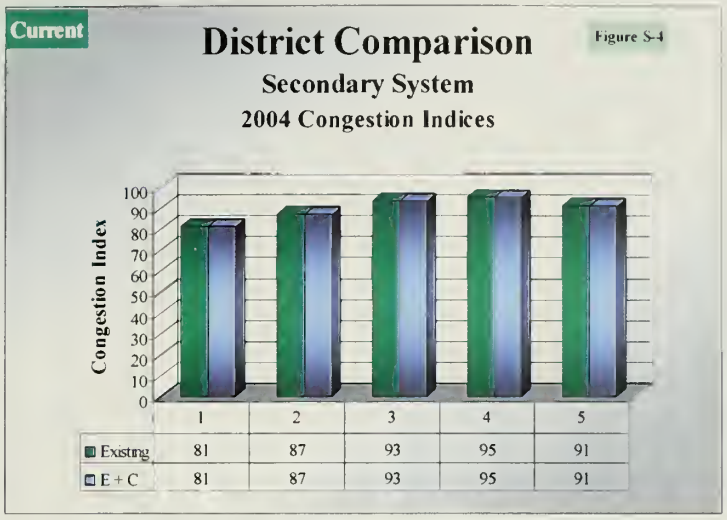
No general inventory data available; no CIs were computed.

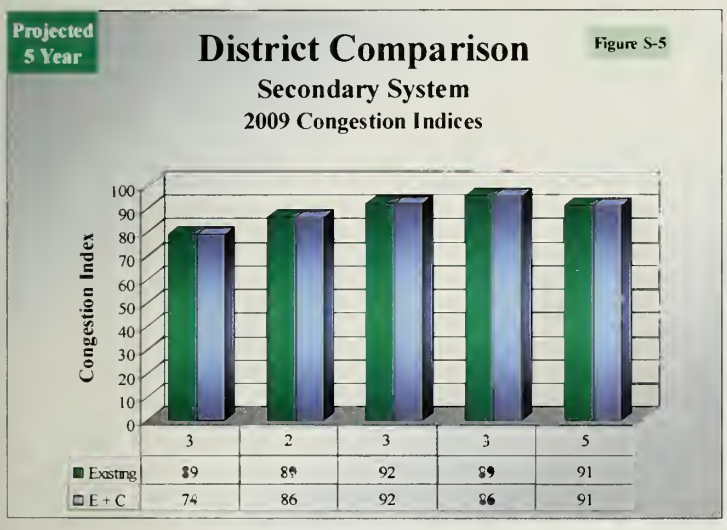
Route has been realigned **or** assigned a new route number not compatable with CoMS. Unable to compute accurate CIs.

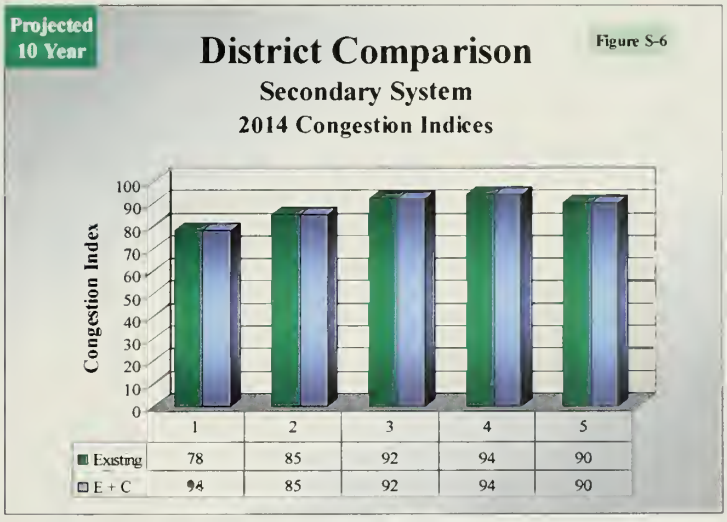
Projects on route have been let. Route will continue to show as having a committed project until the route has been re-inventoried

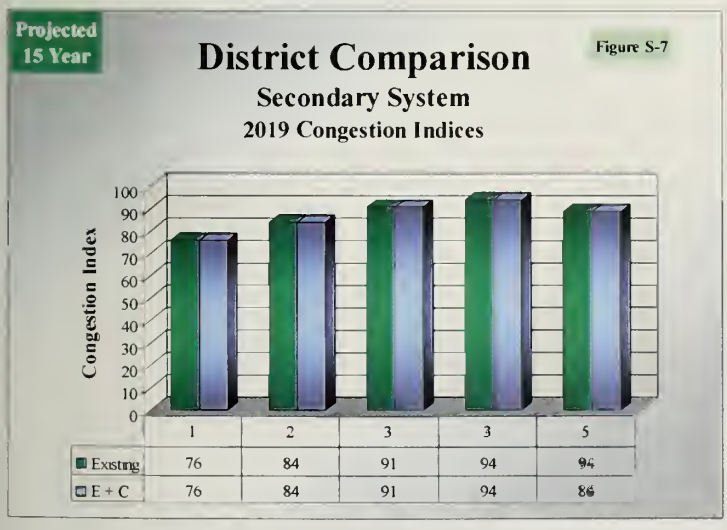
Secondary


District Mileage Comparison
Secondary System
Figure S-3
Miles
1,500
1,250
1,000
750
500
250
0
1 2 3 4 5
Total Secondary Miles 475 559 1378 1446 828


Current
District Comparison
Secondary System
2004 Congestion Indices
Figure S-4
Congestion Index
100
90
80
70
60
50
40
30
20
10
0
1 2 3 4 5
Existing 81 87 93 95 91
E + C 81 87 93 95 91


Projected 5 Year
District Comparison
Secondary System
2009 Congestion Indices
Figure S-5
Congestion Index
100
90
80
70
60
50
40
30
20
10
0
3 2 3 3 5
Existing 89 89 92 89 91
E + C 74 86 92 86 91


Projected 10 Year
District Comparison
Secondary System
2014 Congestion Indices
Figure S-6
Congestion Index
100
90
80
70
60
50
40
30
20
10
0
1 2 3 4 5
Existing 78 85 92 94 90
E + C 94 85 92 94 90


Projected 15 Year
District Comparison
Secondary System
2019 Congestion Indices
Figure S-7
Congestion Index
100
90
80
70
60
50
40
30
20
10
0
1 2 3 3 5
Existing 76 84 91 94 94
E + C 76 84 91 94 86

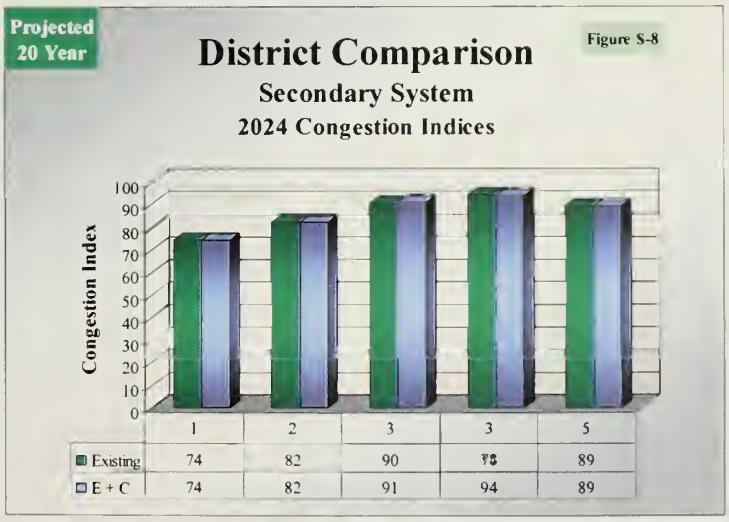
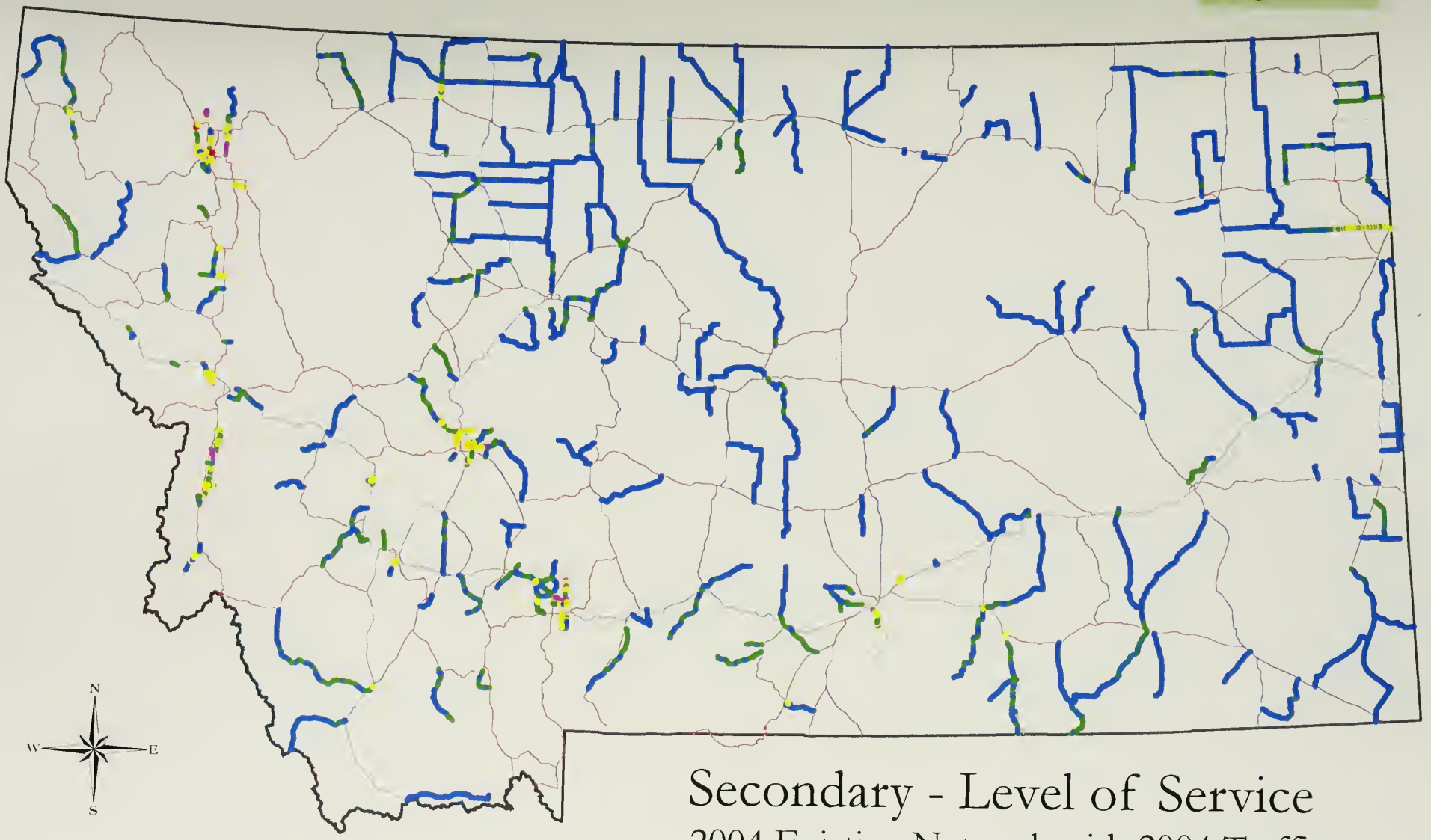

Projected 20 Year
District Comparison
Secondary System
2024 Congestion Indices
Figure S-8
Congestion Index
100
90
80
70
60
50
40
30
20
10
0
1 2 3 3 5
Existing 74 82 90 93 89
E + C 74 82 91 94 89

Figure S-9



Secondary - Level of Service

2004 Existing Network with 2004 Traffic

- Level of Service A
- Level of Service B
- Level of Service C
- Level of Service D
- Level of Service E
- Level of Service F

- Interstate
- NI-NHS & Primary
- Secondary

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Data and Statistics Bureau
Planning Systems Section
November 2005

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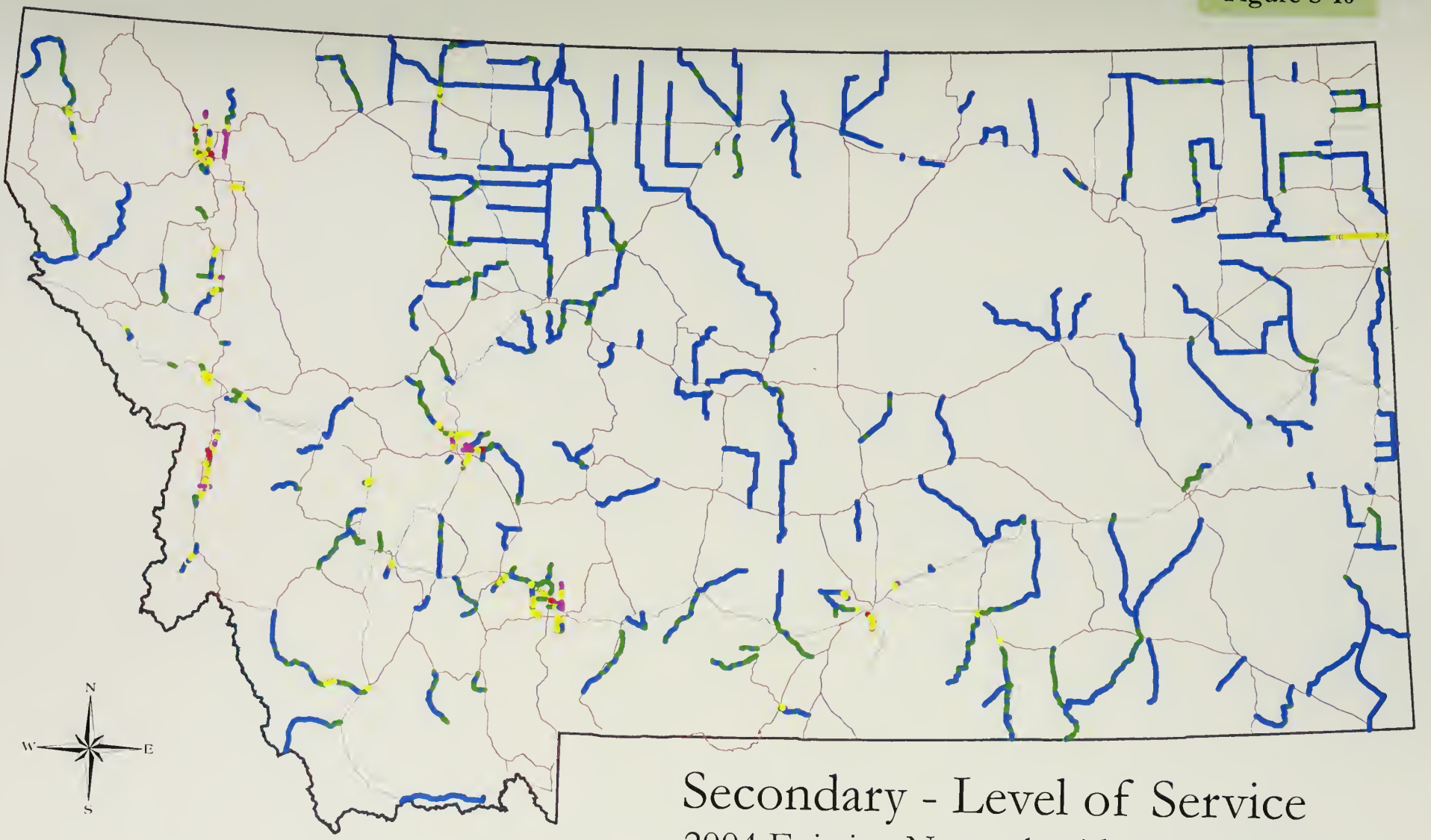
Figure S-10



Secondary - Level of Service

2004 Existing Network with 2014 Traffic

Level of Service A
Level of Service B
Level of Service C
Level of Service D
Level of Service E
Level of Service F

Interstate
NI-NHS & Primary
Secondary

MDT
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Planning Systems Section
November 2005

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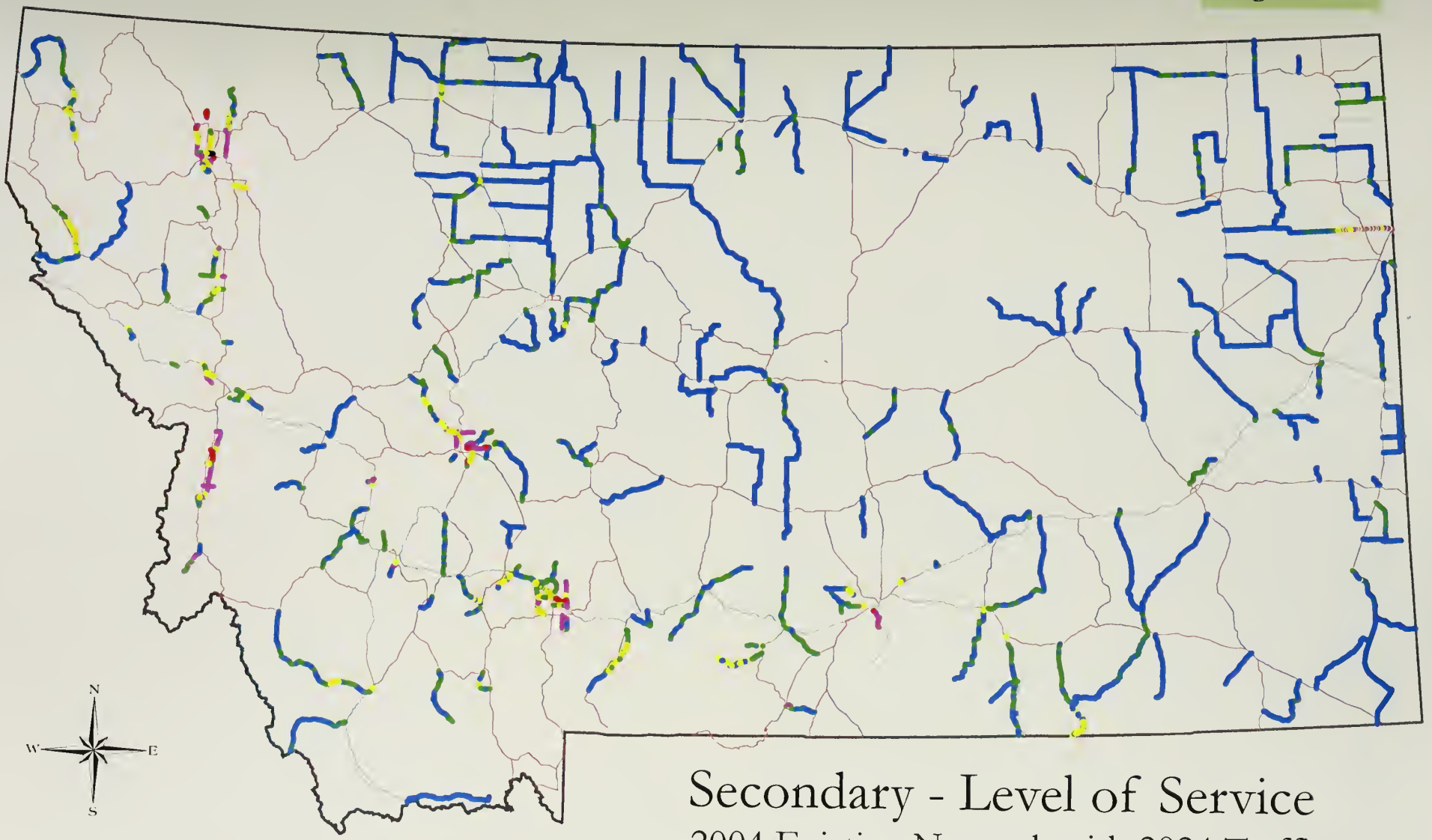
Figure S-11



Secondary - Level of Service

2004 Existing Network with 2024 Traffic

- Level of Service A
- Level of Service B
- Level of Service C
- Level of Service D
- Level of Service E
- Level of Service F

- Interstate
- NI-NHS & Primary
- Secondary

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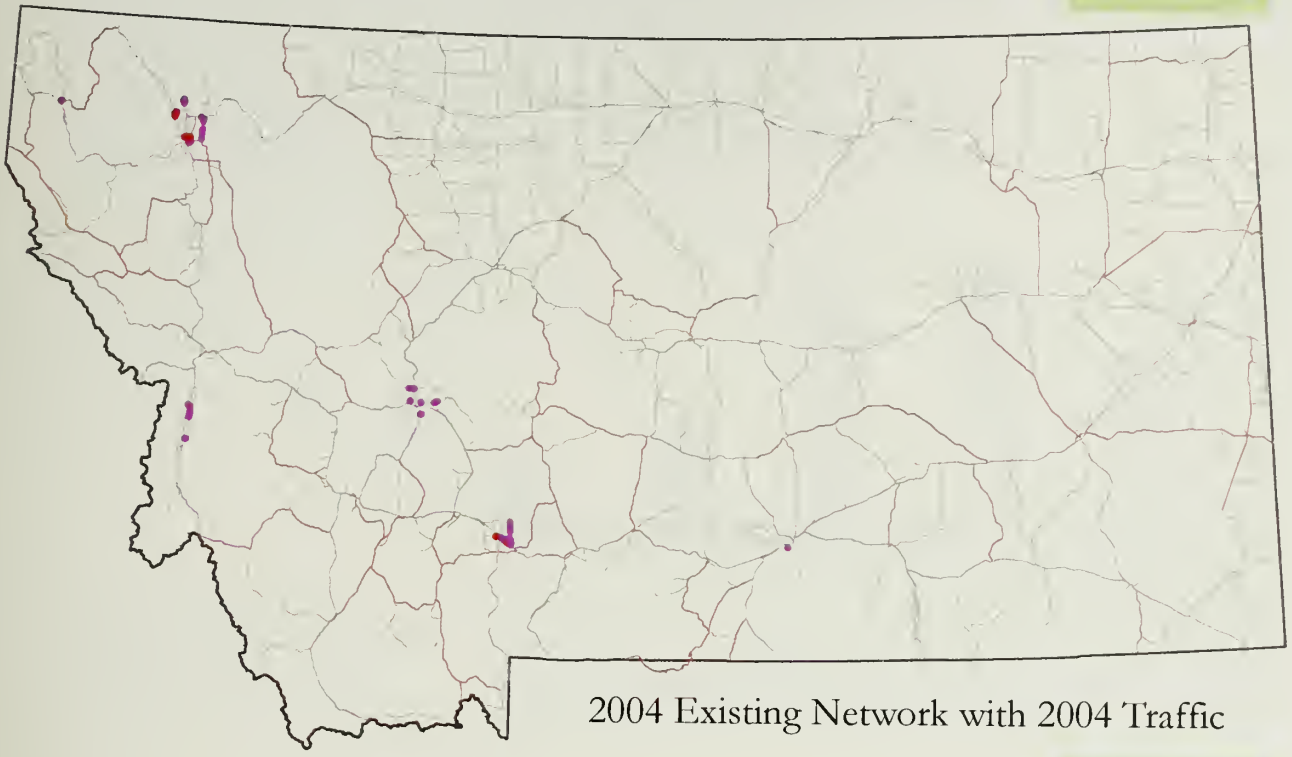
Secondary
Level of Service "Hot Spots"

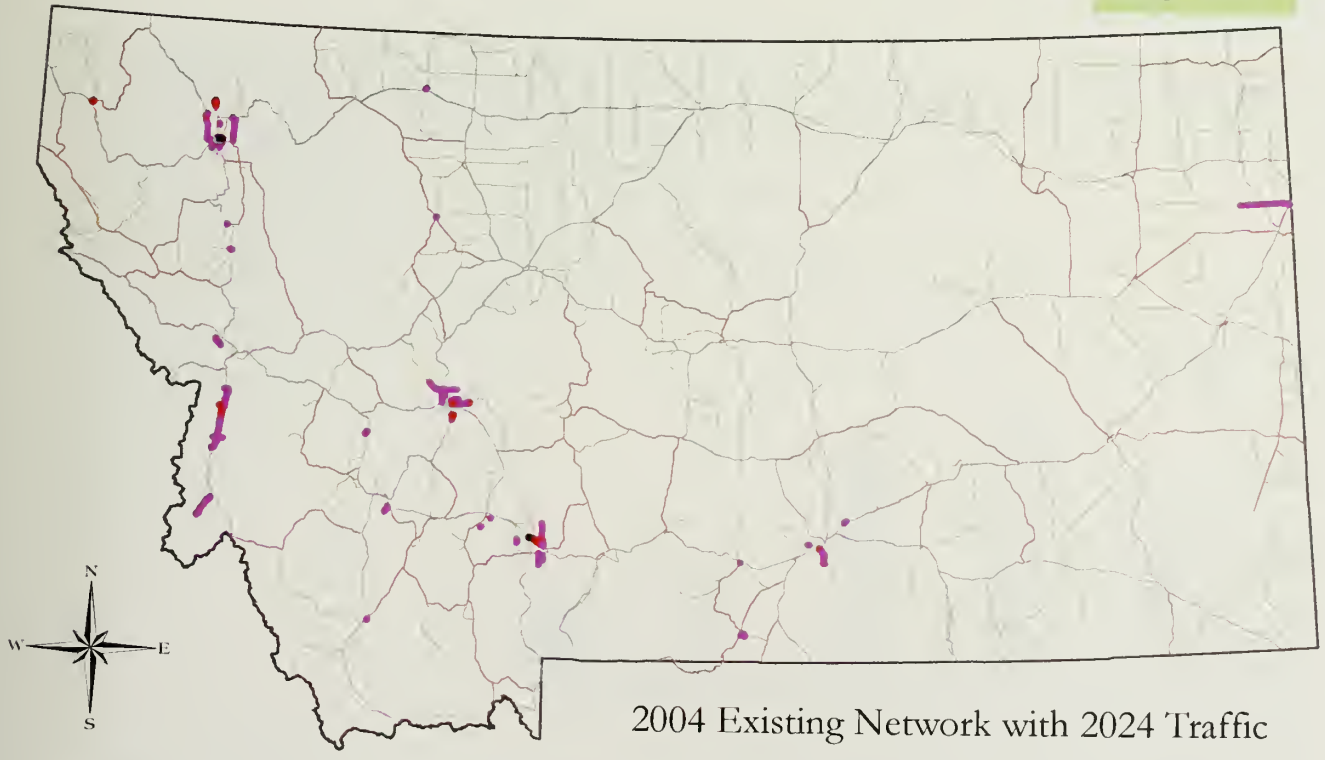
(Congestion Index < 55 - LOS D or Lower)

Figure S-12



2004 Existing Network with 2004 Traffic

Figure S-13



2004 Existing Network with 2024 Traffic

Level of Service A
Level of Service B
Level of Service C
Level of Service D
Level of Service E
Level of Service F
Interstate
NI-NHS & Primary
Secondary

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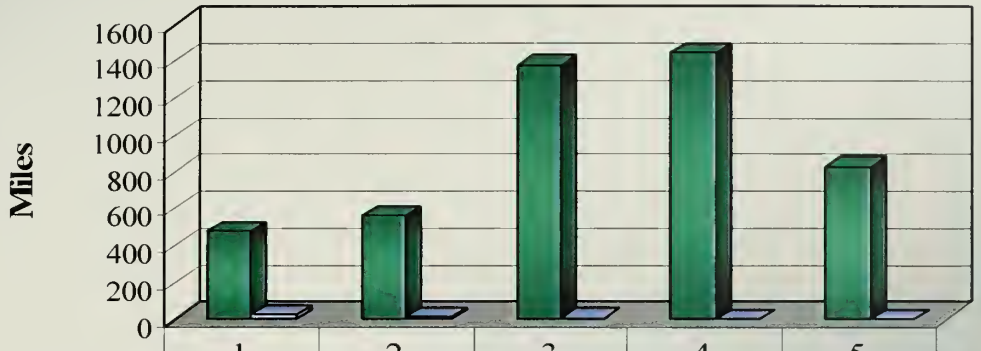
Figure S-14

2004 District Comparison "Hotspots"

Secondary System

Congestion Index < 55 (LOS of D or lower)



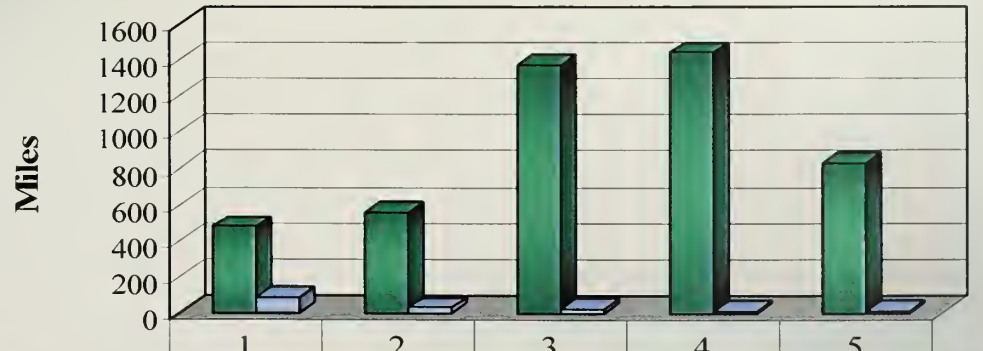
	1	2	3	4	5
Total Secondary Miles	475	559	1378	1446	828
Miles of CI < 55	21	10	3	0	0

Figure S-15

2024 District Comparison "Hotspots"

Secondary System

Congestion Index < 55 (LOS of D or lower)



	1	2	3	4	5
Total Secondary Miles	475	559	1378	1446	828
Miles of CI < 55	85	28	25	12	12

State Highway System

Existing Network

Due to the unavailability of traffic data, all but five of the routes on the State Highway System could **not** be analyzed. Therefore, no statewide or district analysis was done for this system.

E+C Network

The E+C Network consists of the existing highway infrastructure plus any capacity enhancing projects in the most current TCP. There were no State Highway capacity enhancing projects identified in the 2005-2009 TCP for the routes analyzed.

Individual State Highway Routes

Figure SH-1 illustrates the Existing and E+C network CI by individual routes for the five state highways that we have traffic data available.

Missing Data Report

Due to the large number of routes that were unable to be analyzed for this report, the individual route numbers and lengths were not listed.

Figure SH-1

Route No.	2001 [1] Existing [2]	2002 Existing	2004 Existing	2004 E+C	2009 Existing	2009 E+C	2014 Existing	2014 E+C	2019 Existing	2019 E+C	2024 Existing	2024 E+C
X-07611	67	68	67		62		58		53		49	
X-18203	76	77	76		74		71		69		67	
X-32200	64	64	64		61		58		54		51	
X-56683	71	72	80		77		73		69		64	
X-81064	47	47	49		45		41		37		35	

Those CI's in red reflect congestion indices of LOS D or lower (CI <55)

[1] Traffic year

[2] Existing Highway Network

[3] Existing plus Committed Highway Network

No capacity enhancing projects planned for this route

Rural Corridors

General Information

Corridors are comprised of routes ranging from the Interstate system to off-system State Highways. Only the rural portions of the Corridor, except in the case of the Interstate, were analyzed.

Individual Corridor Routes

Figure C-1 (see pages 42-48) illustrates the Existing and E+C Network CIs by individual Corridor.

District Comparisons

Due to the fact that the corridors may comprise multiple systems, to analyze corridors at district and statewide levels would portray a Level of Service (LOS) that may be easily misconstrued. Although CoMS is capable of analyzing corridors by financial district and at a statewide level, as well as by individual corridor, only individual corridor CIs are included in this report.

Hot Spots

The Corridors are combinations of other systems. It would be redundant to display the hotspots that are already displayed in each systems individual section in this report.

Missing Data Report

The data missing from the Corridor section reflects the same information missing from each individual systems section. Again it would be redundant to list the missing information.

Rural Corridor

Congestion Indices

Figure C-1

Corridor	Departmental Route Name *	2004[2] Existing[3]	2004 E+C[4]	2009 Existing	2009 E+C	2014 Existing	2014 E+C	2019 Existing	2019 E+C	2024 Existing	2024 E+C
C000001	N-1, P-1	77	77	75	76	74	74	72	72	70	70
C000002	P-2	88		88		88		88		88	
C000003	N-3, P-3	82	82	81	91	80	86	80	86	79	79
C000004	N-4, P-4	74	70	72	72	70	91	68	91	66	67
C000005	N-5	56	63	52	91	74	91	83	52	37	47
C000006	P-6	74	72	68	86	65	65	68	91	57	57
C000007	N-7, P-7	70	63	67	82	65	86	62	70	59	76
C000008	N-8, P-8	68	70	65	70	62	86	56	63	55	60
C000009	P-9	88	70	87	86	87	86	87	86	86	87
C000010	N-10, P-10	82		81		80		70		78	
C000011	N-11, P-11	77		74		70		68		65	
C000012	N-12	46		83		35		46		27	
C000013	P-13	65	65	68	86	55	70	50	52	45	45
C000014	N-14, P-14	83	70	82	63	81	82	80	91	79	79
C000015	I-15	90		95		93		93		92	
C000016	N-16	93		98		87		54		52	
C000017	P-17	85	86	85	86	83	86	83	65	83	85
C000018	P-18	90	91	90	91	88	86	88	86	88	89
C000019	P-18	70		46		74		84		72	
C000020	N-20, P-20	70	70	91	70	70	76	74	76	73	74
C000021	P-21	70	86	70	86	70	70	91	70	77	78
C000022	N-22, P-22	85	65	83	86	83	91	83	91	82	83
C000023	N-23, P-23	81	82	81	82	80	91	70	91	79	80
C000024	N-24	87		93		62		88		57	
C000025	P-25	88		87		87		87		86	
C000026	P-26	83		84		83		62		81	
C000027	P-27	82	70	82	82	81	91	80	91	80	80
C000028	P-28	72		71		70		68		66	
C000029	P-29	73		71		70		68		67	
C000030	P-46	82		82		81		81		80	
C000031	P-41	91		91		91		98		90	
C000032	P-32	88		88		88		88		87	
C000033	P-33	72		68		65		63		60	
C000034	N-37	87		83		83		83		80	
C000035	P-35	68		65		61		67		54	
C000036	P-45	91	70	70	70	70	70	74	91	68	86
C000037	N-37	70	70	74	70	70	70	72	70	70	71
C000038	N-38	85		32		88		0		0	
C000039	P-39	70	70	70	70	91	70	70	70	46	76
C000041	P-41	74		32		71		68		68	
C000042	P-42	88		88		88		88		87	
C000043	P-44	87	86	87	86	85	86	88	86	86	86
C000043	P-44	85	86	83	86	84	91	83	91	84	83
C000045	P-45	85	86	83	86	84	91	83	84	84	86
C000046	P-46	83	86	83	91	62	82	80	91	79	86
C000047	P-47	82		81		81		80		79	
C000048	P-48	83	84	83	84	82	83	81	82	81	82
C000049	P-49	73	73	72	72	71	71	70	70	68	86
C000050	N-50, P-50	50	50	45	46	38	38	34	34	28	29

Rural Corridor

Congestion Indices

Corridor	Departmental Route Name *	2004[2] Existing[3]	2004 E+C[4]	2009 Existing	2009 E+C	2014 Existing	2014 E+C	2019 Existing	2019 E+C	2024 Existing	2024 E+C
C000051	P-51	91	91	91	91	90	90	90	90	90	90
C000052	P-52	40	40	36	36	31	31	28	28	23	23
C000053	N-53	84	84	82	82	80	80	78	78	75	75
C000054	P-54	87		86		86		86		85	
C000055	P-55	71		69		67		65		62	
C000056	P-56	74		72		71		69		67	
C000057	N-57, P-57	75	75	75	75	74	74	74	74	73	73
C000058	P-58	63		60		58		56		53	
C000059	P-59	89	90	88	89	87	88	86	87	85	86
C000060	N-60, P-60	79	80	78	79	77	78	77	77	76	76
C000061	N-61	84		83		82		80		79	
C000062	N-62	85	86	85	85	84	85	83	84	83	84
C000063	N-63	73	74	72	73	70	71	68	69	66	67
C000065	P-65	44		39		36		32		27	
C000066	P-66	84		83		82		81		80	
C000067	P-67	74		74		73		72		71	
C000068	P-68	77		76		74		73		72	
C000069	P-69	80	81	78	79	76	77	74	75	72	73
C000072	P-72	72	76	69	73	66	71	62	68	59	64
C000075	P-75	78		77		76		76		75	
C000078	P-78	65	67	61	63	57	59	53	56	49	52
C000080	P-80	88		88		88		87		87	
C000081	P-81	88		88		88		87		87	
C000082	P-82	49	55	45	50	40	45	36	41	33	37
C000083	P-83	55	56	53	54	52	52	50	50	47	47
C000084	P-84	62	62	57	57	53	53	48	48	41	41
C000085	N-85	46	49	40	43	35	37	31	32	18	26
C000086	P-86	70		69		66		64		62	
C000087	P-87	65		60		56		51		46	
C000088	N-88	75		75		74		73		72	
C000089	P-89	63	64	61	62	59	61	58	59	56	57
C000090	I-90	90		88		86		83		79	
C000091	P-91	65		64		63		62		60	
C000092	N-92										
C000093	N-93	56		54		51		49		47	
C000094	I-94	95		95		94		94		93	
C000095	P-95	75		74		74		73		72	
C000096	P-96	72		71		70		69		68	
C000097	P-97	70		70		69		68		67	
C000098	P-98	94		94		94		93		93	
C000099	N-99	96		96		96		96		95	
C005203	N-101										
C005205	N-102										
C005210	N-103										
C005211	N-104										
C005250	N-105										
C000115	I-115	97		97		96		96		95	
C000201	S-201	84		83		82		82		81	
C000202	S-202	88		87		87		87		86	
C000203	S-203	65	67	61	62	56	58	52	53	47	48

Rural Corridor

Congestion Indices

Corridor	Departmental Route Name *	2004[2] Existing[3]	2004 E+C[4]	2009 Existing	2009 E+C	2014 Existing	2014 E+C	2019 Existing	2019 E+C	2024 Existing	2024 E+C
C000204	S-204	98		98		98		98		98	
C000205	S-205	72	72	70	70	68	68	66	66	64	64
C000206	S-206	58		54		50		47		43	
C000207	S-207	98		98		98		97		97	
C000208	S-208	97	98	97	97	97	97	96	97	96	97
C000209	S-209	69		66		64		62		59	
C000210	S-210	86		84		82		79		77	
C000211	S-211	70		68		66		65		62	
C000212	S-212	83		81		79		78		75	
C000213	S-213	90		89		89		88		87	
C000214	S-214	93		93		92		92		92	
C000215	S-215	90		90		90		89		89	
C000217	S-217	98		97		97		97		97	
C000218	S-218	95		94		94		94		94	
C000219	S-219	93	93	93	93	92	92	92	92	91	91
C000220	S-220	91		90		88		87		86	
C000221	S-221	92		91		90		89		88	
C000222	S-222	76		75		73		71		69	
C000223	S-223	91		91		91		90		90	
C000224	S-224	95		94		94		93		93	
C000225	S-225/U-5213[1]	95		95		94		94		94	
C000226	S-226/U-5214[1]	91		91		90		89		89	
C000227	S-227	87		86		85		84		83	
C000228	S-228	92		91		90		90		89	
C005809	S-229/U-5809[1]	65		63		61		58		56	
C000231	S-231/U-5820[1]	62	63	59	60	55	56	52	53	48	49
C000232	S-232/U-5711[1]	90	90	89	89	89	89	88	88	88	88
C000233	S-233	97	97	97	97	96	97	96	96	95	96
C000234	S-234/U-5708[1]	85		85		85		84		84	
C000235	S-235/U-1211[1]	76	78	74	77	72	75	70	73	67	70
C000236	S-236	95		94		94		94		94	
C000237	S-237/U-7101[1]	95		95		94		94		93	
C000238	S-238/U-7111[1]	93	93	93	93	93	93	93	93	93	93
C000239	S-239	95	95	95	95	95	95	94	95	94	95
C000240	S-240	90		90		89		89		89	
C000241	S-241	93		93		93		93		93	
C000243	S-243	97		97		97		97		96	
C000244	S-244	92		92		92		91		91	
C000245	S-245	97		97		97		96		96	
C000246	S-246	94		94		94		93		93	
C000247	S-247	100		100		100		100		100	
C000248	S-248	92		92		92		91		91	
C000249	S-249	80		79		79		78		77	
C000250	S-250	94		94		93		93		93	
C000251	S-251	96		96		95		95		95	
C000252	S-252	95		95		94		94		94	
C000253	S-253	95	95	95	95	94	95	94	94	94	94
C000254	S-254	94	94	93	93	93	93	93	93	92	92
C000255	S-255	95		95		94		94		94	
C000257	S-257	78		77		76		75		75	

Rural Corridor

Congestion Indices

Corridor	Departmental Route Name *	2004[2] Existing[3]	2004 E+C[4]	2009 Existing	2009 E+C	2014 Existing	2014 E+C	2019 Existing	2019 E+C	2024 Existing	2024 E+C
C000258	S-258	82		92		82		91		81	
C000259	S-259	93		92		92		92		91	
C000260	S-260	78		77		76		76		73	
C000261	S-261	96	96	95	95	95	95	95	95	95	95
C000263	S-263/U-8123[1]	74		92		86		86		63	
C000269	S-269	62		86		53		49		45	
C000271	S-271	91	92	91	92	86	96	86	91	89	90
C000272	S-272	74		86		92		76		69	
C000273	S-273	89		86		99		86		85	
C000275	S-275	71		99		86		86		65	
C000276	S-276	83	83	82	82	91	96	86	96	79	79
C000277	S-277	99		99		99		86		98	
C000278	S-278	88		99		86		84		83	
C000279	S-279	78		76		73		76		68	
C000280	S-280/U-5823[1]	78		76		76		86		71	
C000282	S-282	61		86		86		54		51	
C000283	S-283	92		92		91		91		90	
C000284	S-284	90	90	99	96	86	96	86	96	87	87
C000285	S-285	96		86		95		95		94	
C000286	S-286	86		95		84		82		80	
C000287	S-287	79		77		86		76		66	
C000288	S-288	77		76		86		76		66	
C000290	S-290	86		86		84		82		80	
C000292	S-292	75		92		76		86		63	
C000294	S-294	95	95	95	95	94	96	91	94	93	93
C000295	S-295	93		92		92		91		91	
C000297	S-297	98		86		86		86		98	
C000298	S-298	84		91		91		82		82	
C000300	S-300	96		86		86		95		95	
C000302	S-302/U-1034[1]	86		86		95		95		84	
C000306	S-306	90		99		86		86		85	
C000308	S-308	83		86		76		76		73	
C000310	S-310	97	97	86	96	86	96	86	96	96	96
C000311	S-311	94		94		91		91		93	
C000313	S-313	88		86		99		99		87	
C000314	S-314	86		95		84		82		81	
C000315	I-315	63		86		54		95		40	
C000317	S-317	58		54		50		45		42	
C000320	S-320	97		99		99		99		97	
C000322	S-322	91		91		91		91		91	
C000323	S-323	97	97	99	97	86	96	86	96	96	96
C000324	S-324	93	93	92	92	91	96	90	96	89	89
C000325	S-325	98		95		99		99		97	
C000326	S-326	97		99		97		95		96	
C000327	S-327	97		99		99		99		96	
C000328	S-328	99		99		99		99		99	
C000330	S-330	94		94		93		93		92	
C000331	S-331	88		87		87		87		86	
C000332	S-332	97		97		97		96		96	
C000334	S-334	91		91		90		90		90	

Rural Corridor

Congestion Indices

Corridor	Departmental Route Name *	2004 Existing[3]	2004 E+C[4]	2009 Existing	2009 E+C	2014 Existing	2014 E+C	2019 Existing	2019 E+C	2024 Existing	2024 E+C
C000335	S-335	93		93		92		92		92	
C000336	S-336	99		96		96		99		99	
C000338	S-338	97		96		96		96		96	
C000340	S-340	96		96		96		96		96	
C000341	S-341	99		96		96		96		99	
C000342	S-342	66		65		81		93		62	
C000343	S-343	97		87		87		96		96	
C000344	S-344	93		82		82		93		91	
C000345	S-345	77		78		78		87		63	
C000346	S-346	84		81		82		81		80	
C000347	S-347	80		78		78		78		72	
C000348	S-348	92		82		81		96		89	
C000350	S-350	96		96		96		96		96	
C000352	S-352	85		93		81		83		82	
C000354	S-354	85	85	93	83	83	83	82	82	81	81
C000357	S-357	88		96		87		87		87	
C000358	S-358	93		81		93		82		92	
C000359	S-359	83		82		98		78		75	
C000360	S-360	92		98		96		93		88	
C000363	S-363	98		96		96		96		98	
C000365	S-365	96		96		96		96		95	
C000366	S-366	97		87		87		96		96	
C000370	S-370	81		78		78		78		70	
C000373	S-373	63		59		59		51		47	
C000374	S-374	93		93		93		82		92	
C000379	S-379	97		87		96		96		96	
C000381	S-381	95		96		96		81		94	
C000382	S-382	88		87		87		96		85	
C000384	S-384	93		82		93		81		90	
C000386	S-386	82		82		93		81		80	
C000387	S-387	84		84		83		83		83	
C000391	S-391	97		97		97		96		96	
C000393	S-393	77		75		73		71		69	
C000396	S-396	99		99		99		98		98	
C000398	S-398	Images not available									
C000399	S-399	89		88		88		87		87	
C000400	S-400	98		98		97		97		97	
C000401	S-401	82		82		81		80		79	
C000405	S-405	96		96		95		95		95	
C000408	S-408	92		92		91		91		90	
C000409	S-409	98		98		98		98		97	
C000411	S-411	59		56		52		49		46	
C001201	S-412/U-1201[1]	54		52		50		48		46	
C000413	S-413	99		99		99		99		99	
C000416	S-416/U-1033[1]	63		59		54		49		44	
C000417	S-417	95		95		94		94		94	
C000418	S-418										
C000419	S-419	81		79		78		76		75	
C000420	S-420	81		81		80		79		78	
C000421	S-421	82	82	81	81	80	80	79	79	78	78

Rural Corridor

Congestion Indices

Corridor	Departmental Route Name *	2004[2] Existing[3]	2004 E+C[4]	2009 Existing	2009 E+C	2014 Existing	2014 E+C	2019 Existing	2019 E+C	2024 Existing	2024 E+C
C000422	S-422	95		94		94		93		92	
C000424	S-424/U-6706[1]	61		88		88		52		48	
C000426	S-426	96		88		95		95		94	
C000427	S-427	94		93		93		93		92	
C000430	S-430/U-5818[1]	58	62	84	58	95	54	78	50	42	46
C000431	S-431	92		91		94		88		90	
C000432	S-432	98		88		88		88		98	
C000434	S-434	84		94		93		84		80	
C000435	S-435	96		95		88		88		93	
C000437	S-437	98		88		88		95		97	
C000438	S-438	94		94		88		88		93	
C000441	S-441	87		88		95		88		83	
C000444	S-444	96		95		95		95		94	
C000446	S-446	89		88		88		88		87	
C000447	S-447	94		94		88		93		93	
C000448	S-448	98		88		88		88		97	
C000449	S-449	98		88		87		87		97	
C000451	S-451	88		87		87		88		85	
C000453	S-453	69	70	88	67	94	67	88	62	58	59
C000454	S-454/U-5824[1]	83		93		88		93		82	
C000457	S-457	97		87		87		87		97	
C000462	S-462	99		95		88		88		99	
C000463	S-463	92		94		91		95		90	
C000464	S-464	87		88		88		95		84	
C000466	S-466	89		88		87		87		86	
C000467	S-467	98		87		87		87		96	
C000470	S-470	97		87		88		88		96	
C000471	S-471	91		88		88		88		88	
C000472	S-472	79	80	77	78	78	78	72	74	69	71
C000473	S-473	78		78		73		70		66	
C000474	S-474	68		87		88		64		63	
C000478	S-478	87		88		88		88		85	
C000480	S-480	95		94		88		94		93	
C000482	S-482	76		78		73		72		71	
C000484	S-484	96		88		95		88		95	
C000486	S-486	84		93		88		94		80	
C000487	S-487	50		88		88		40		39	
C000489	S-489	89		88		88		88		87	
C000493	S-493	95		95		95		95		94	
C000494	S-494	97		87		87		87		97	
C000500	S-500	96		88		95		95		95	
C000503	S-503/U-6713/U-6730[1]	79		78		78		78		73	
C000504	S-504	99		88		88		88		98	
C000507	S-507	85		95		95		84		84	
C000508	S-508	90		89		88		95		86	
C000509	S-509	97		96		96		95		95	
C000511	S-511	94		93		93		93		92	
C000512	S-512	96		96		96		95		95	
C000513	S-513	90		90		89		89		88	
C000516	S-516	92		92		91		91		91	

Rural Corridor

Congestion Indices

Corridor	Departmental Route Name *	2004[2] Existing[3]	2004 E+C[4]	2009 Existing	2009 E+C	2014 Existing	2014 E+C	2019 Existing	2019 E+C	2024 Existing	2024 E+C
C000517	S-517	91		91		91		91		90	
C000518	S-518	70		67		65		62		59	
C000522	S-522	58		57		55		52		50	
C000528	S-528	97		97		97		97		96	
C000529	S-529	96		96		95		95		95	
C000531	S-531	85		84		82		81		79	
C000532	S-532/U-6901[1]	85		84		82		81		79	
C000533	S-533/U-8131/U-8132[1]	80		79		78		77		76	
C000534	S-534	98		97		97		97		97	
C000537	S-537	97		97		97		97		97	
C000540	S-540	85	86	84	84	82	82	80	80	78	78
C000541	S-541	98		98		98		97		97	
C000543	S-543	96		96		95		95		95	
C000544	S-544	95		95		95		94		94	
C000547	S-547	97		96		96		96		96	
C000548	S-548	56		53		47		40		37	
C000551	S-551	91		91		90		90		89	
C000552	S-552	94		94		94		93		93	
C000556	S-556	95		95		94		94		93	
C000559	S-559	89		88		87		86		85	
C000564	S-564	97		96		96		96		95	
C000565	S-565	91		90		90		90		90	
C000566	S-566	94		93		93		92		92	
C000567	S-567	84		83		82		81		81	
C000568	S-568	90		89		89		89		88	
C000569	S-569										
C001207	S-570/U-1207[1]	Images not available									
C000571	S-571										
C000572	S-572										
C000573	S-573										
C007611	X-07611	67		62		58		53		49	
C018203	X-18203	76		74		71		69		67	
C032200	X-32200	64		61		58		54		51	
C056683	X-56683	80		77		73		69		64	
C081064	X-81064	49		45		41		37		35	

*Routes included in corresponding corridor. (e.g. C000001 is comprised of N-1 and P-1)

CI's in red reflect congestion indices of LOS D or lower (CI <55)

[1]A Corridor may consist of rural and urban routes however only the rural portion is analyzed by CoMS.

[2]Traffic Year

[3]Existing Highway Network

[4]Existing plus Committed Highway Network

No capacity enhancing projects planned for this route.

Primary routes located in urban areas; no CI's were computed

No general inventory data available; no CI's were computed

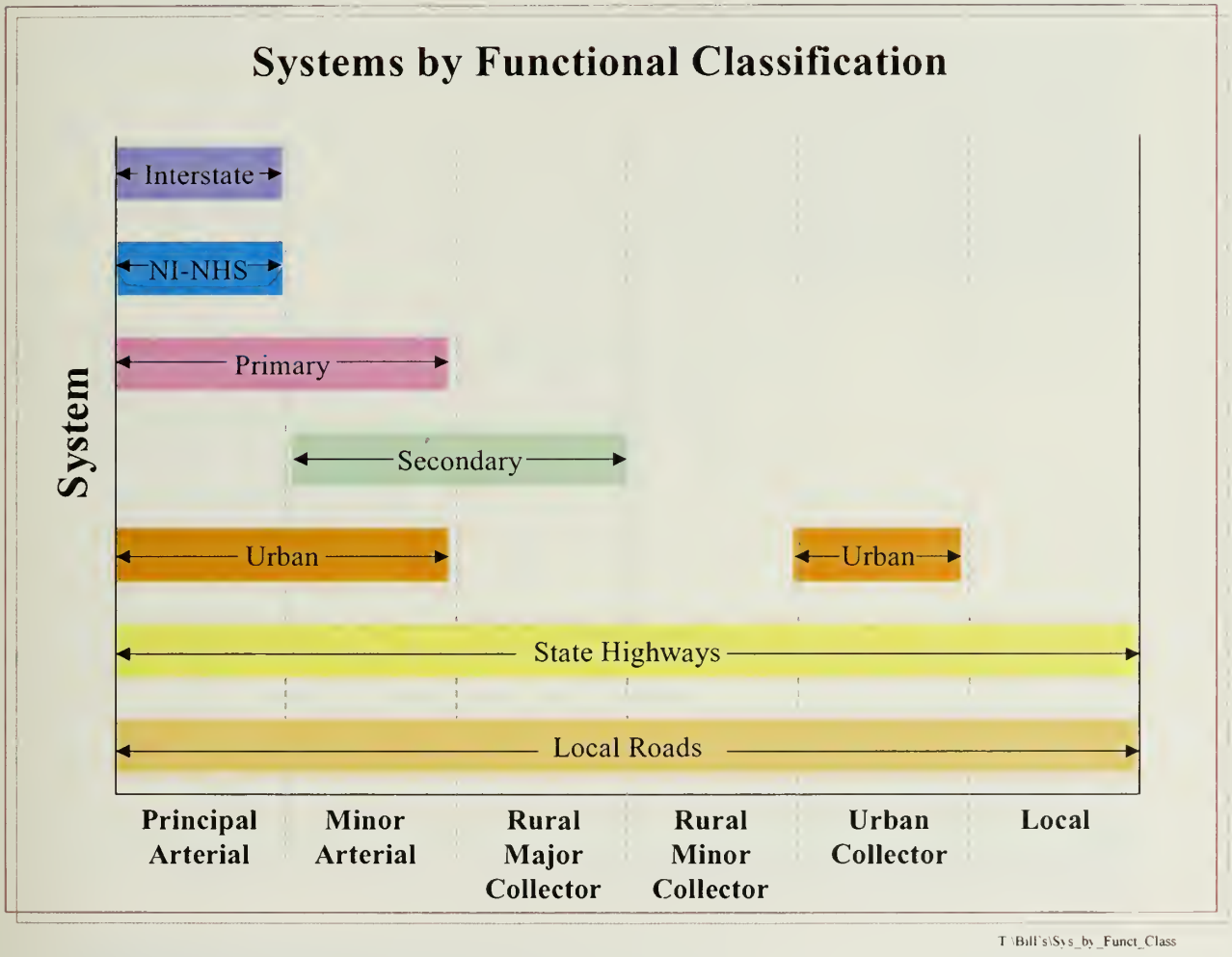
Route has been realigned **or** assigned a new route number not compatable with CoMS. Unable to compute accurate CIs.

Projects on route have been let. Route will continue to show as having a committed project until the route has been re-inventoried

Functional Classification

The CoMS also calculates CIs by rural functional class groupings.

The following chart displays the functional class group in which each system can be classified:



The Interstate system, by definition, consists entirely of principal arterials. Due to it's unique nature, it is usually analyzed based on it's own merit, as is the case within the CoMS. Therefore, the Interstate ***System*** results and the functional class results are the same. The Interstate principal arterials are not reported in this section. The analysis of the remaining principal arterials in this section ***do not*** include the Interstate System.

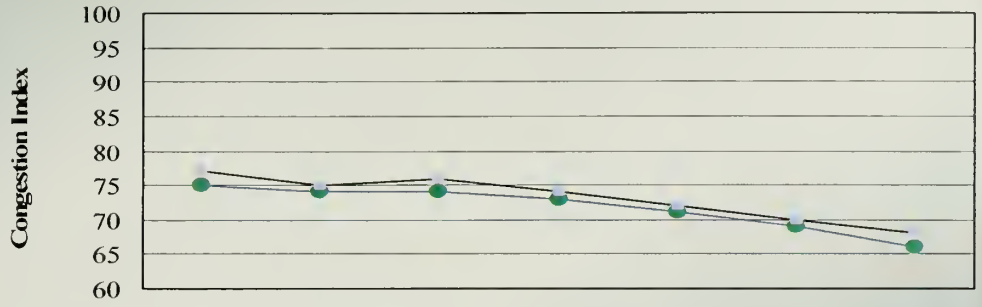
It should be understood that the functional class data herein is reported only to the extent to which it covers the on-system network of highways.

Figures FC-1 through **FC-3** illustrate the statewide CIs by functional class group. (see page 50)

Statewide Functional Classification

Figure FC-1

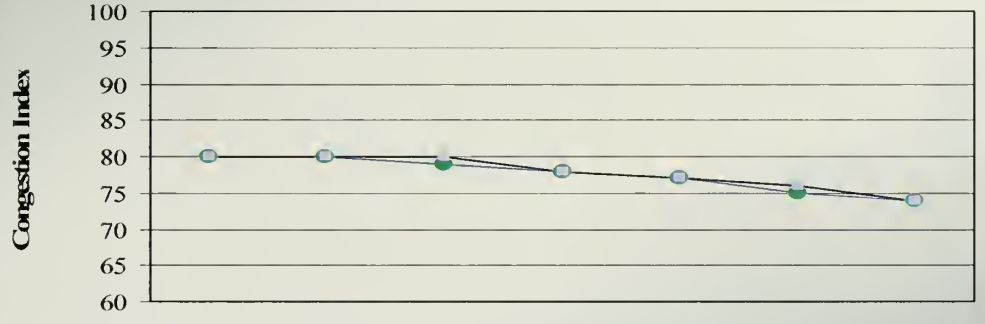
Principal Arterials (Non-Interstate)
Statewide
Congestion Indices



Year	2001	2002	2004	2009	2014	2019	2024
Existing	75	74	74	73	71	69	66
E + C	77	75	76	74	72	70	68

Figure FC-2

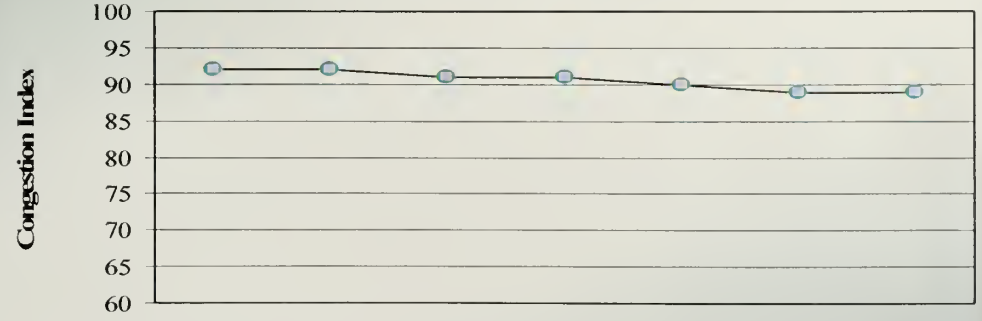
Minor Arterials
Statewide
Congestion Indices



Year	2001	2002	2004	2009	2014	2019	2024
Existing	80	80	79	78	77	75	74
E + C	80	80	80	78	77	76	74

Figure FC-3

Major Collectors
Statewide
Congestion Indices



Year	2001	2002	2004	2009	2014	2019	2024
Existing	92	92	91	91	90	89	89
E + C	92	92	91	91	90	89	89

Special Facilities

Special facilities are defined as any group of routes, individual routes, or route segments on the rural system for which anyone desires congestion index information.

The CoMS has the capability to calculate current and future year CIs on the Existing and E+C highway systems for current and future year scenarios.

For example, when the Districts are nominating projects, they may want to know what effect a reconstruction project might have on the level of service on a certain segment of highway. Given the location and proposed geometrics of the project, CoMS can calculate the CI under a **"what if"** scenario and compare the results to the same segment of road under the existing conditions. Another use may be for planning purposes.

Often times corridor studies are undertaken and service levels are usually a consideration. CoMS can be helpful in these instances also.

The combination of "special facilities" is infinite. Anyone desiring congestion indices on a unique corridor or route segment need only contact the Data and Statistics Bureau with the location and, if available, the proposed capacity enhancing project information.

For the purpose of this report only three corridors have been identified for reporting purposes. They are the Billings-Great Falls, Camino Real and CANAMEX corridors, as shown in **Figure SF-1**.

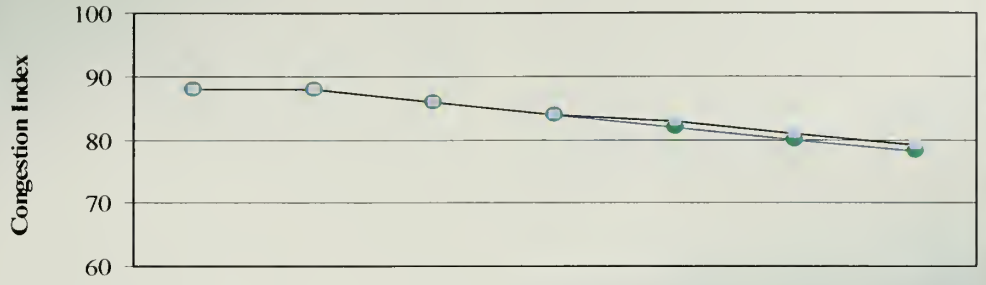
Figures SF-2 through **SF-4** (see page 52) illustrate the CIs on the Existing network for the current and future years.

Figure SF-1

Data and Statistics Bureau

Figure SF-2

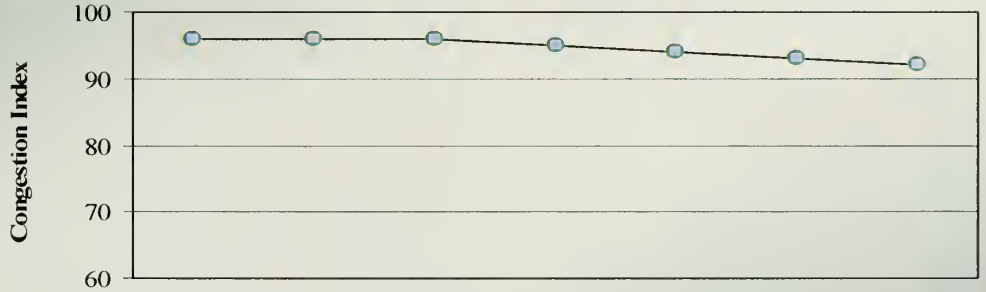
Camino Real Corridor
Congestion Indices



Year	2001	2002	2004	2009	2014	2019	2024
Existing	88	88	86	84	82	80	78
E + C	88	88	86	84	83	81	79

Figure SF-3

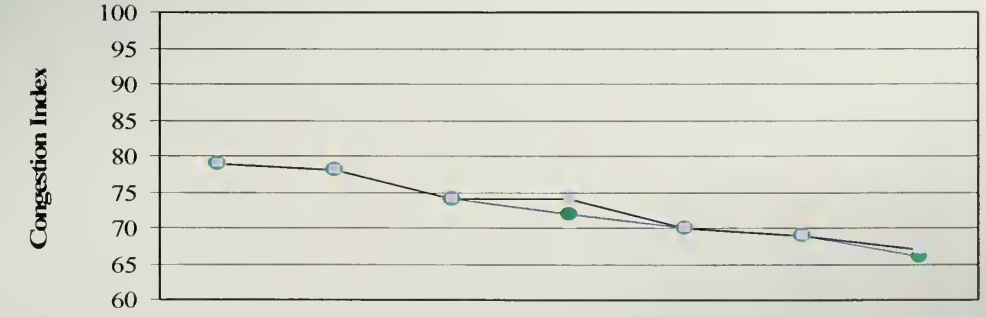
CANAMEX Corridor
Congestion Indices



Year	2001	2002	2004	2009	2014	2019	2024
Existing	96	96	96	95	94	93	92
E + C	96	96	96	95	94	93	92

Figure SF-4

Billings/G.F. Corridor
Congestion Indices



Year	2001	2002	2004	2009	2014	2019	2024
Existing	79	78	74	72	70	69	66
E + C	79	78	74	74	70	69	67

Miscellaneous CoMS Information

As mentioned in previous reports, some of the information needed to calculate CIs on the rural corridors was not available anywhere within the Department. Therefore, the data had to be collected. Previously unavailable data items collected include:

- Lane width
- Shoulder width
- Terrain type
- No pass zone locations

While this data was being collected, staff also seized the opportunity to collect other data items such as rumble strip and access point locations that could be utilized for other purposes within MDT. While the collection of rumble strips and access point locations was intended to be a one-time only data collection effort, staff has continued to update this data on an as-needed basis.

The above data items are far from all-inclusive. However, they represent items that can be reported in many different ways and can also be mapped for informational purposes. Anyone wishing further details on any of these data elements should contact the Data and Statistics Bureau.

As we all know, collecting data in a state the size of Montana is a very time consuming task. To deal with time constraints and staffing limitations, the Data and Statistics Bureau has embraced the TIS digital roadway images as an invaluable source of information. But re-shooting the state's highway infrastructure is in itself a Herculean task. Bear in mind the CoMS Existing Network portrayed in this report reflects inventory from the most current images available and will remain as such until new roadway images are available.

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